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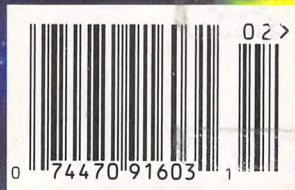
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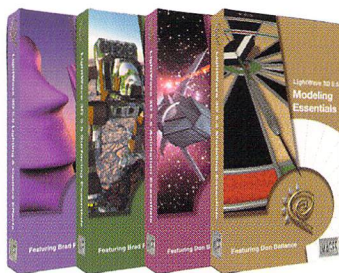
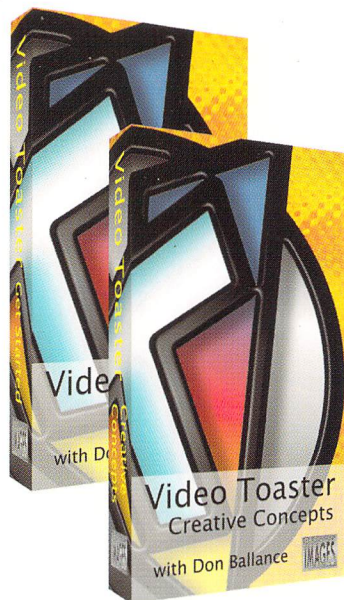


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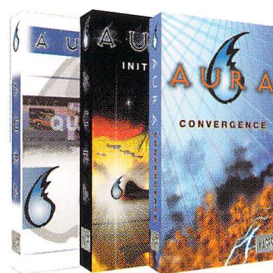
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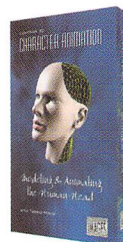


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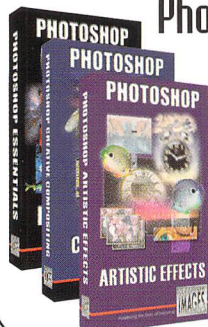
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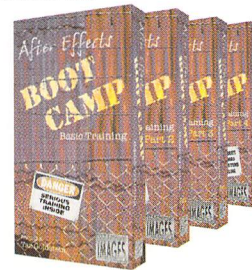


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NewTekNIQUES

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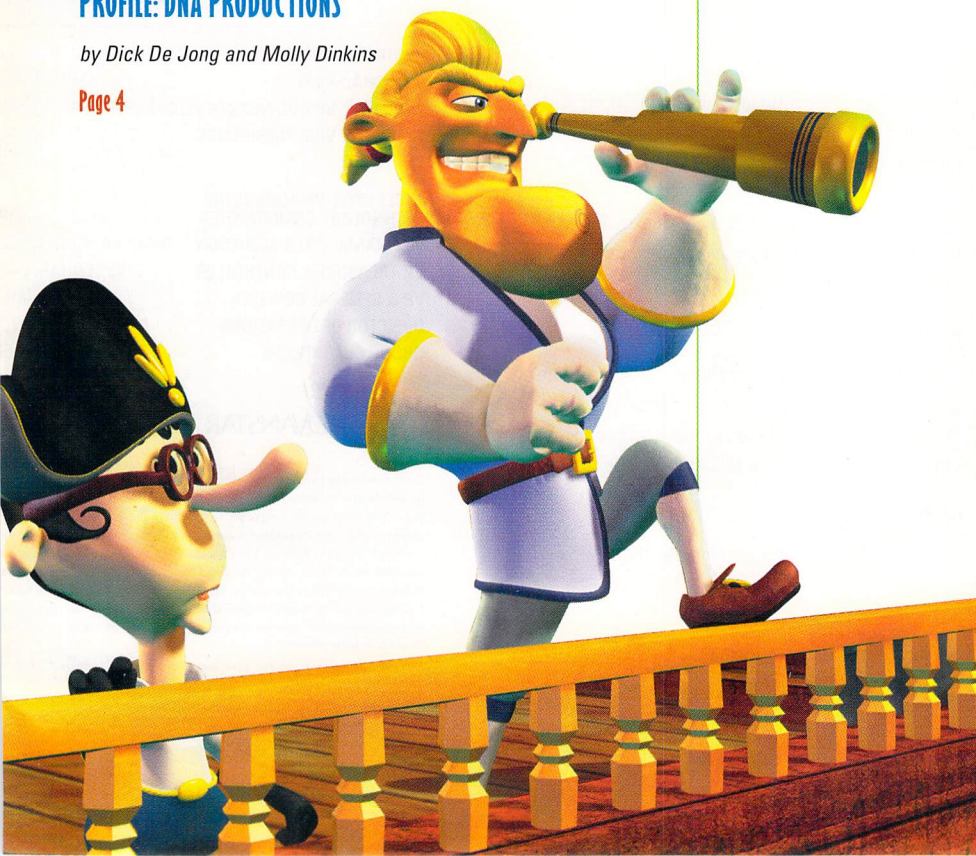
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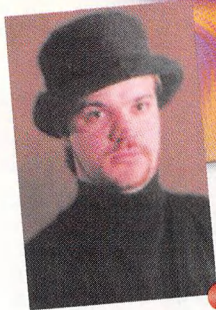
MAPPING THE DNA STORY PROFILE: DNA PRODUCTIONS

by Dick De Jong and Molly Dinkins

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ON THE COVER Jimmy Neutron flees from the evil Yokian Chicken Ships as he heads towards a 2001 theatrical release! Design by DNA Productions.



First Words

A FEW WORDS FROM OUR EDITOR-IN-CHIEF

by
Nostradhomas

THE NEAR FUTURE PROPHECIES

Predictions For 2000 and Beyond

When I started with NewTekniques, the first thing I did was make a list of all the things I wanted to see happening with the magazine - in print and online. As time went on, and I got to know the readership better, the list grew longer - much longer; and it still continues to grow almost daily. I've already seen some of those things happen since becoming an editor a little over a year ago; but many more are still to come.

A Time For Revelation

I spent most of the holidays, a quiet time when I was able to get a lot of work done, thinking about what NewTekniques and NewTek would see for the years marked by the beginning of 2000. In the tradition of my namesake, I assembled a list of prophetic visions:

- NewTekniques will make it easier for NewTek product users of all kinds to determine before starting a tutorial whether or not it will work with the version of software they are using, and to know what skill level it is intended for.
- NewTekniques readers will find there is something to read and learn about every major NewTek product within every issue of NewTekniques.
- NewTekniques readers who sent in the survey from the October/November 1999 issue, will be pleased to know how much their effort was appreciated. As well, all of the people that provided email addresses will receive a personal reply from the editor.
- NewTekniques readers who didn't send in the survey will realize how helpful it is to let the magazine editor know what they think of the magazine, so that he can continue to improve it. Then, even know-

ing that it's too late to win a prize, those people will proceed to fill out the survey and send it in anyway.

- NewTekniques Online will expand into a free and easily accessible online community that will include: related industry news; product tutorials, reviews, announcements and information; informative articles; production features; artist galleries and features (showcasing work from some of the best digital artists in the world); article/review indexes; contest announcements; web links; upcoming and back issue previews; and more.

- NewTekniques Online will provide website update information and up-to-the-moment news through a new email newsletter.

- NewTek will continue to astound us all with new, improved, better, faster, more powerful, progressive, and increasingly creative tools.

- NewTekniques will find more and more of its readership is overjoyed by increased productivity and artistic success.

Prophetic Immediacy

As you turn the pages of this issue, and explore the growing website, you'll see that some of my predictions have already started to come true - and that I'm pretty good at this foretelling the future thing.

Last Words...

The year 2000 will present many exciting surprises.

Nostradhomas, soothsayer

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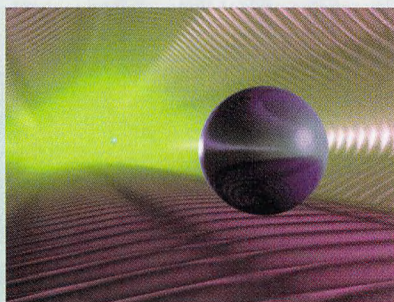
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NEW ART GALLERY

www.newtechniques.com/ArtGallery/

The NewTechniques Art Gallery is designed to showcase the graphic work of users of LightWave 3D, Inspire 3D, and Aura.

COLUMNS



LightWave Fundamentals: Fog-An introduction to LightWave's Fog effect.

The Idea Factory: Wedding Videos and Murphy's Law - Bob's Ten Rules For Wedding Videography.

Image Effects: Lumi-Lunacy and Bi-Polar Syndrome - Making the most of the NewTechniques LumiEssence and BiColorize plug-ins.

Silicon Alchemy: Transmeta: What's All The Noise About? - Although on the surface this new CPU may seem to be a letdown, here's why it's revolutionary.

REVIEWS

Creature Creator (Windows + Mac)

Soundprobe (Windows + Amiga)

Art Effect (Amiga)



Visions

FROM THE PAST, FOR THE PRESENT, AND INTO THE FUTURE

by
Tim Jenison

IF ONLY I HAD A TIME MACHINE!

When I was a kid in the 1960s, we didn't have a TV set. Dad said, "I think I'll wait until they've perfected color TV". Maybe that's why I have a thing about collecting old TV sets.

I have about 200 antique TVs, some dating from the 1940s. Some of them are very bizarre looking, but guess what? With a little TLC, they would each fire up and happily tune in a modern TV station. The same video standard has been in use for about 60 years now.

There is one very rare TV that I lust after. The CBS color set. See, for a while in the 1950s, the FCC chose CBS's color transmission scheme. It was not compatible with existing sets, so TV stations needed all new equipment. Old B/W sets couldn't receive the new color programs. The picture quality, though, was "gorgeous".

Oops. It bombed. Customers stayed away in droves. The FCC eventually reversed their decision and chose RCA's NTSC scheme - which WAS compatible with the older sets.

Today, those old CBS sets are worth their weight in gold to collectors. Only three are known to exist. If only I had a time machine! I'd send a letter back to my dad in 1950 and say:

"Dear Mr. Jenison,

I can't tell you why, but it is very important that you buy a new CBS color TV, even though it isn't perfected. Keep the TV in its factory carton and store it in the garage until further notice. Trust me, in the future you'll be glad you did."

It's kind of amazing that we're still watching a TV system designed 60 years ago. Or maybe not. After

all, billions of dollars are invested in that standard, in equipment, and shows produced on videotape. Not to mention those zillions of TV sets.

Well, it's all about to end. The FCC and Congress have decided that we're finally going to stop using NTSC. Within 6 years, we're all going to be watching the new HDTV standard. Er, make that ...one of the 18 new HDTV standards.

I, for one, can't wait. My computer monitor has been able to display high resolution imagery for years. I can create, edit, and watch film-res material on my PC today. Computers are definitely going high definition.

I can't help but wonder about those zillions of standard-res TVs out there, though.

Hold on a sec... Ok, you're never going to believe this. Read this email I just received:

From: progeny2@predictions.r-us
Subj: word to the wise
Date: 1/26/00 5:24 pm
To: ceo@newtek.com

Mr. Jenison,

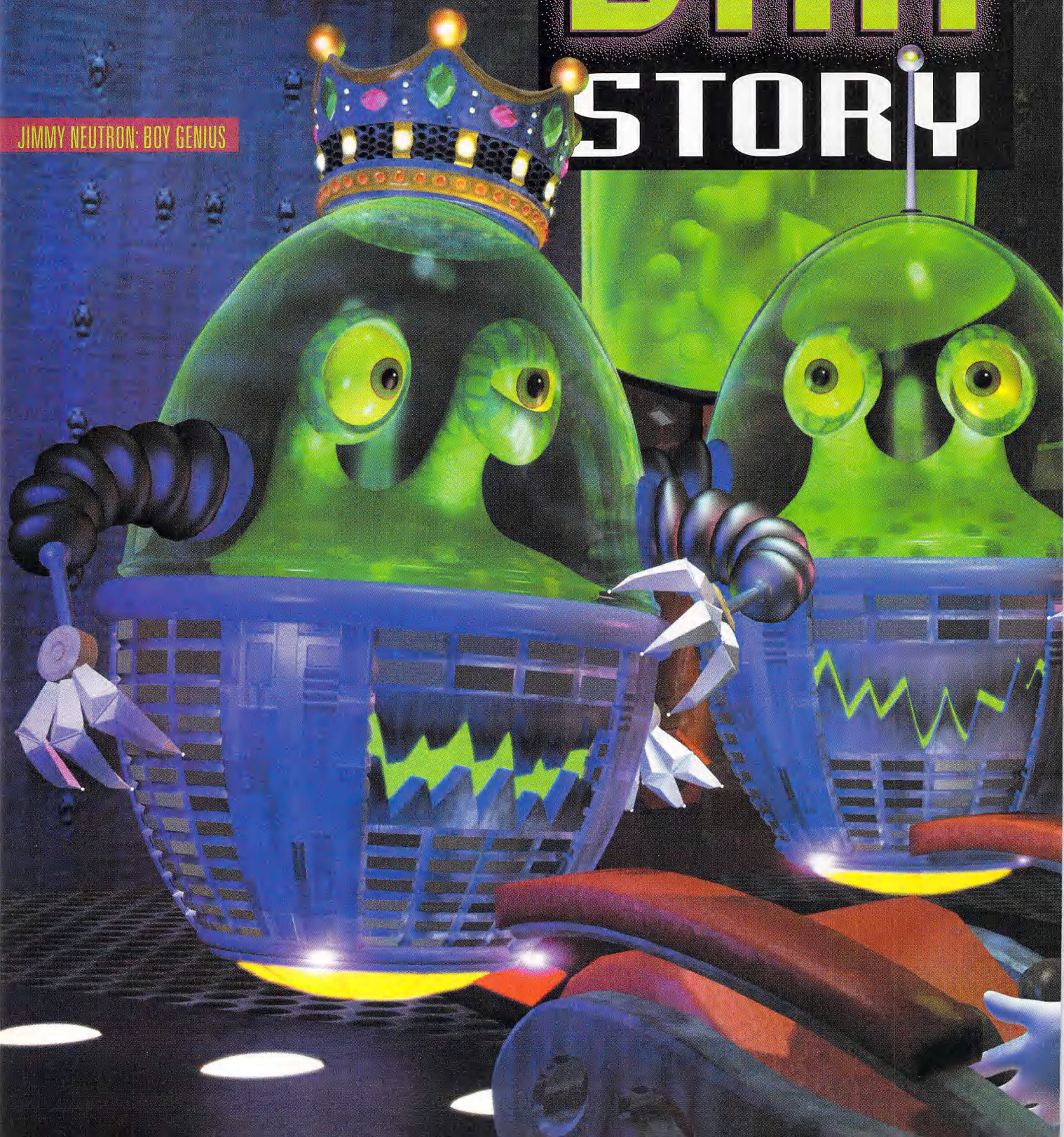
I can't tell you why, but it is very important that you buy a Wasabi HDTV-18 TV set. Keep the TV in its factory carton and store it in the garage until further notice. Trust me, in the future you'll be glad you did!

Tim Jenison, Chairman & Founder - NewTek

Mapping the

DNA STORY

JIMMY NEUTRON: BOY GENIUS



BY DICK DE JONG AND MOLLY DINKINS

OLIVE, THE OTHER REINDEER

DNA Productions recreated the slightly skewed, definitely cock-eyed world of artist J. Otto Seibold in *Olive, the Other Reindeer*, the Fox Network animated Christmas special. Based on Seibold and Vivian Walsh's popular children's book, Olive was voiced by Drew Barrymore and was produced by Matt Groening's The Curiosity Company (creators of *The Simpsons*). The hour-long fable follows the adventures of Olive, the intrepid pooch who saves Christmas by filling in for the bruised Blitzen and helping Santa and all of the other reindeer deliver the yuletide gifts.

Olive is not DNA's first foray into the North Pole neighborhood. In 1997, DNA, along with Steve Oedekerk, produced the Christmas special, *Santa vs. the Snowman*, an epic battle pitting Santa and his snowmobiling elves against a misunderstood Snowman.

Quietly, far from the madding crowd of Hollywood, Dallas based DNA Productions has engineered an impressive decade long resume. Over the last five years, John Davis and Keith Alcorn, the founders of DNA have been shepherding their pet project, *Jimmy Neutron: Boy Genius*, through the studio system. If they stay on schedule, in the summer of 2001 Paramount and Nickelodeon will release *Neutron*, the first all LightWave animated feature length film.

While Davis has been spending the last few months writing the script for *Neutron*, the full-scale animation production won't start until later this spring. So last year, Davis was searching for an enticing endeavor to tide DNA over until *Neutron* kicked in. "We were looking at several projects," Davis said. "*Olive* was by far the most intriguing because we loved the style of the book."

"The fun thing about *Olive* was coming up with the technique to mimic that style," Davis con-



tinued. "We did it all in LightWave. All in a 3D environment, but it doesn't look like a typical LightWave show. It's kind of like a living pop-up book. Or if Disney did *South Park*." Actually, looking at characters like Norman the cop, a more apt description would be deranged Dadaist deconstructs Dagwood.

"And then the chance to work with Matt Groening... We thought this would be a great opportunity to do something different and outside the normal 3D stuff that we had been doing."

Groening's Curiosity Company was looking for a 3D shop to do *Olive*. "Curiosity actually doesn't do productions, they are a producer's group," Davis explained. "Because of the look of the book, they thought it should be done in 3D; and they knew they weren't going to have time to do it in 2D."

Alex Johns, a producer at Curiosity, was familiar with DNA's work and contacted them out of the blue. They asked DNA for a sample of how they would handle the job. "So we did about a minute long test reel," Davis said. Paul Allen, DNA's Head of Animation for Olive, added, "They just said that they wanted something that looks like the book. But John's a film director, so he made a mini-story." They scanned Olive, Santa, and Martini, the wisecracking reprobate penguin, from the book and brought the images into Modeler. They built a short scene where Olive walks across the tundra, out pops Martini, Olive meets Santa, and then she pulls his sleigh. "The IK [inverse kinematics] on Olive was a little hinkey," Allen admitted. "She had a little limp."

Despite the gimpy Olive, DNA was hired. "The fact that we did it so quickly and that it looked just like the book pretty much clinched it," Davis concluded. "One of the reasons that they felt comfortable about going with us is that we have a lot of 2D experience and the look of the show is such a hybrid of 2D and 3D."

"The book was actually done in Illustrator - that's what J. Otto uses. There are lots of little gradients and colored ink lines and lots of little weird detailing stuff - little squiggles and dingbats that are used as texturing devices - which, in 2D land, would drive you insane. You could do it



with cutouts like *South Park*. But you couldn't get as good of a performance as you could if you did a lot of deformation. Traditional hand drawn? No way! What we did was the best of both worlds, which was to do it as a kind of a quasi cutout but in the 3D environment that allowed for deformation and a lot more manipulation of the character. And we did a lot of dramatic, cinematic flying the camera around.

"Matt would have preferred it all to be 2D, so they were just trying to make the 3D look as 2D as possible. I would have taken advantage of the 3D a little more than we did. It was hard because we've been so used to doing this sort of lush 3D look with all the lighting, effects and shading. To try to flatten everything back out, it was tricky. We were fighting ourselves the whole way.



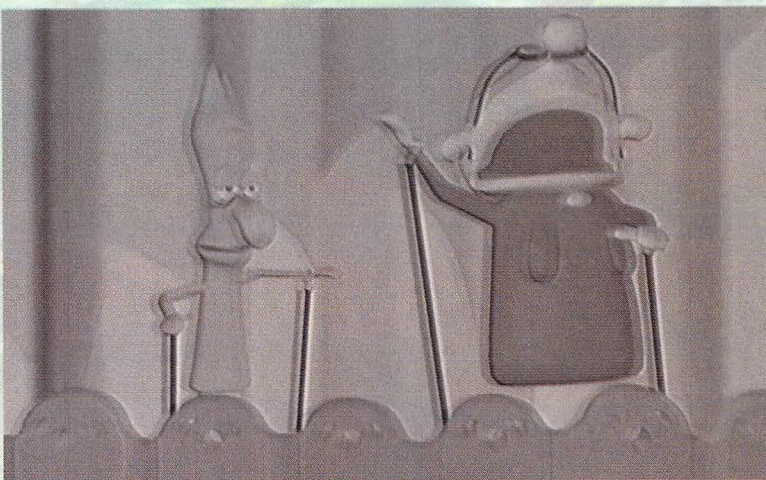
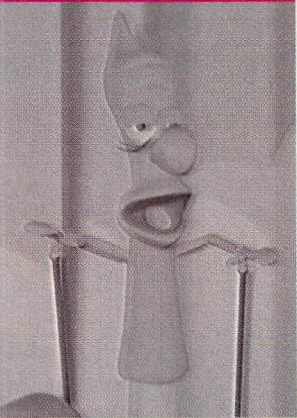
Welcome to My World

"The real hard part about *Olive*, other than doing an hour show in six months, was that it was the first 3D show that they (Groening and his Curiosity Company) had ever done," Davis stated. "They didn't know anything about 3D, didn't know anything about how the process worked. In hindsight, probably we didn't do enough hand holding at the very beginning. They started getting antsy.

"They're so used to doing things a certain way on *The Simpsons*. They have their way of doing storyboards and we have ours. We tend to board 3D like a live action show because we like to get in there and move the camera around, take advantage of what you can do with it and not stick that closely to the boards. They're just kind of a roadmap to keep you in the right direction. Whereas, they had been working as though the script and storyboard were God." So Curiosity wound up bringing Steve Moore into the project to do the boards and direct. "They wanted somebody from their side to be out here," Davis said.

J. Otto's book is rather thin and a lot of new characters and environments had to be created for the television program. J. Otto started out doing some of the design work.

NANNA & LIL' PUSS PUSS



"The bus driver was a J. Otto design that we took literally," Davis described. "Same thing with Santa. Then we got other designs, for example, J. Otto's design for Olive's owner, that the producers took one look at and said, 'No way, no way.' So we completely redesigned him - the same with the postman. J. Otto drew this really freaky, grotesque looking postman character - that was kind of cool - but it wouldn't have held up as well. We also did all the secondary characters.

"When it first started out, I tried to find out who's doing the approvals. At first, they were saying, 'J. Otto. It's his book; we want to get him involved.' The problem was that J. Otto had never worked with animation before and it was complicated by the fact, for animation, you have to be consistent with your characters from one scene to the next or it just turns into trash. If you look at his book, there's almost no consistency; but it works great."

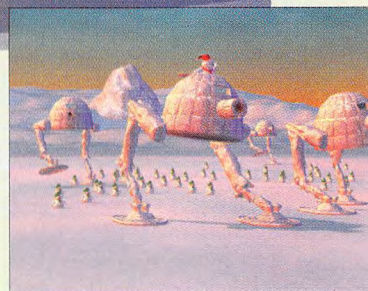
Sean Jensen, DNA's Head of Modeling for *Olive*, added, "You'll notice in the book that Olive is never on 'model' - she changes depending on when you look at her. So we had to invent rules for the modeling and how she was going to look." To facilitate the process, J. Otto came out to Dallas for a design powwow. "When we sat down with him, we found out that he didn't have any rules - he didn't like rules." Jensen concluded, "We found out that he really was just making this up as he went along."



WEIRD BEARD



But Seibold did offer some guidelines, Jensen admitted. "Regarding eyes in particular, he was very cautious about where the eye placement was. Generally, they were something between extremes. They were never exactly on - never exactly parallel or perpendicular - but they were never too far off either."



To continue the design process, DNA created line art sketches that they would fax to California for comments. Then they would build the character or object in 3D, texture it and send it off for color approval. Initially, the process was excruciatingly slow because the producers were bogged down in minutiae.

"We would do designs on the ticket stub that the bus clerk sells to Olive. The stub is this big on screen," Davis demonstrated with his fingers almost touching. "They give notes. We redesign the ticket stub, send it back, and redesign the ticket stub again." All of that correspondence for a slip of paper that was too small to see.

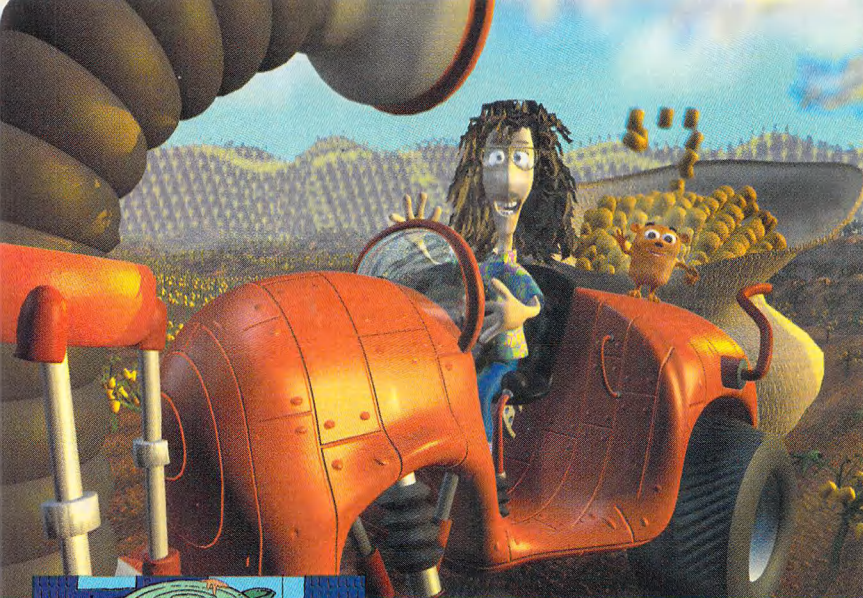
Producers Matt and Claudia De La Roca "were real hands on. We had more notes and changes on Olive than we've had in ten years of business. Eventually, we got past all that and were able to design as we went. Having Steve Moore here was absolutely necessary. We needed someone here to do approvals and do them daily. It's the only way a show like this was going to happen in six months.

A Jottifying Experience

To recreate J. Otto's off-kilter characters required the DNA modelers to scramble their share of genetic code. "Gray's Anatomy went right out the window," Jensen admitted. "We had to dislocate shoulders and hips. But we wanted to make sure throughout that we were very consistent with his style. It's very easy to do it badly."

Not surprisingly, engineering this mutant style entailed some unconventional techniques. "The models are really weird if you look at them in Modeler," Davis described. "They are in layers. It's like how we would put together a 2D limited animated character back in traditional cel days. You would have multiple cel overlays so you're not constantly redrawing things. You would have a separate mouth, separate eyes, and separate teeth."

"In Modeler, we had all these separate geometries. If you look at it from the top, they're all layers but they're very, very close together. We kept running into semantic problems. Even though the character was 3D, it was 2D because it had no third dimension. We would manipulate the teeth and the tongue to make all the positions and save it as a morph target. But they're actually not sharing any vertices; they're just these pieces. But when you run them back, there they go, they're talking."



"It was an odd show because we had multiple variations on each character," Jensen added. He then displayed an Olive model - her head turned to the left and her two feet pointing outwards. "For example, this is 'front left'. The characters never look straight at us. So we have a front left, a front left when she's flying, and when she's sitting. Front right, 1/4, 3/4. Sitting, standing, four legged, two legged, we had a total of somewhere around 20 to 25 flat Olives. And of course, each of those orientations included the parts of the body we needed to manipulate and all the mouth positions that we needed to use."

The quadrupeds and bipeds were not the only things to receive a nucleotide nip and tuck. Every object in Olive's world passed through DNA's workshop for a little chromosomal cobbling. Jensen described the method in the madness. "We went through a process with 3D models that we dubbed 'jottification' [j. otto - fication]. We would build the model and keep it symmetrical in case we had to make modifications. It's really hell to modify a model that's already been jottified. But when we were done and it was approved, the last thing we would do was jottify it. Usually there would be a couple of twists in one direction, a shear in another direction. Just kind of twist it up a bit and mangle it."

Jensen then displayed a fire hydrant on his monitor. "Here's the symmetrical version and the jottified one. It's a very subtle distinction. We don't go too haywire. Just a little off so it doesn't look right from any perspective. Ideally, if we know we are only shooting this from one angle, we would have skewed it to distort for a certain perspective."

"We had 30 or so different postal trucks," Jensen continued. "On most of the vehicles, we tried to keep them reasonably symmetrical because they ended up looking very freaky when they were distorted. But what we would do, to the extent that we could, was to make sure that none of the curves were very regular. Everything is just slightly goofy."

"With any object, we found that there were very few right angles. Where there were, they were used very deliberately because nothing else on the object had a right angle. We needed one to accentuate the oddity, the strangeness of his world; and no parallel lines if we could get away with it."

"It really did get fun for the modelers especially. We got so very warped in our sensibilities," confided Jensen as he pointed to one of the twisted trucks. "They started to look normal to us. Our sense of perspective got a little strange. After awhile we were in J. Otto's world and not in our own."

Re-Animating

DNA's production pipeline for *Olive* was straightforward. "Modelers would pass things to the texture artists, who would pass them to the scene layout people, who would take all the assets and assemble them together. Then they'd do scene set-ups for the animators," Davis ticked off the steps. "The animators would do their animation and send them off to the TD's [technical directors], who would do the final lighting and import everything into the final environment, getting everything ready to put to tape." Since the TD's were at the end of the pipe, they had to deal with all of the problems that had accumulated up stream. Once the pump was primed, the scenes began to flood down the pipeline and DNA had to add more TD's. "We started out with two, then we went to three, and then two shifts of three," Davis said.

The process of vivifying the jottified jamboree was an equal measure of prestidigitation and methodical manipulation. The biggest trick was taking the flat models and turning them on screen. "How do you go from one view to the other?" asked Davis. "We had scenes where we had 3D flat characters on the bottom and then a cel animated top just for the head so it could do a quick turn. There's lots of sleight of hand and cutting around or using morph targets, or using cel animation, or using 3D. The hard part was blending things and still be 'on model.'"

"There was a scene where Martini, the penguin, had to bounce around in the back of the mail truck and there was no way that was going to be done with 2D characters," Jensen said. So they created a 3D penguin stunt double. "In the end, the model was a big compromise between all of the relevant orientations of the flat characters."

"We also discovered that just with little cheat pieces, we could actually take a model - if the character jumps and lands on something - we could hit and turn and face the opposite direction. We would replace body parts in squash and stretch. When you run it at speed, by golly it looks like they just turned around."

"There's lots of little tricks that we started learning once we got far enough along where we could start experimenting. At first, we just wanted to make sure that we had all the bases covered because there were a lot of things to work out in terms of the lip sync."

"We didn't use Cel Shader because that didn't look like the book. Instead, we had to turn luminosity up on everything to flatten it out; but it still enabled us to get perspective on it. Most of the scenes rendered pretty quickly. Some scenes took a long time because there was a lot of Puppet Master in it."

Another drag on render times was caused by the nearly exclusive use of image maps. DNA used almost no procedural for texturing. In fact, they used so many texture

maps, they occasionally received an error message that LightWave couldn't load any more images into the scene. "We hit that ceiling a few times - started getting this message," Davis said, "which we had never seen before. We would go, 'Wow, I didn't know there was a limit.' We used motion blur on everything. I hate field rendering with a passion. So no field rendered stuff."

Even though Curiosity plumbed a few twists and turns into the pipeline (rewriting sections of the script and

adding four songs), DNA completed the 766 shot production at the end of October. "As slow as the project started, we were just sailing at the end," Davis said.

The result is a delightfully surreal visual voyage through J. Otto's oblique Oz. "He's definitely a character - a great guy but someone who definitely has his own vision of life," Jensen described his experience working on the show. "We lived and breathed in J. Otto's world for awhile and it was a fun place." ■■

GOOD GENES

"We had no clients, no money, no demo reel and we didn't know anybody," said the two animators recalling their 20-something years when they launched a startup company from their kitchen. Eleven years later, in 1999, they were signing contracts with Paramount and Nickelodeon to write and create an original feature length animation. Sounds like a Hollywood success story, right? Wrong. For a start, it happened in Dallas, Texas, 1200 miles from the movie mecca.

The partnership between DNA co-founders Keith Alcorn and John Davis evolved from a chance meeting at a party in 1981. Film student Davis resurfaced as an intern at Bill Stokes Associates, a 2D animation studio where Alcorn was the animation cameraman. Alcorn, the artist, heard a rumor that the mechanically savvy Davis wanted Alcorn's techy job.

"I ignored him, put him off, and wouldn't teach him anything," Alcorn admitted. "But slowly, I realized that John was really a nice guy - so in the end, I taught him my job." Good karma, because when Stokes closed, Alcorn went to K & H Productions where Davis was already working. "John ended up being my boss!"

When their employers retired, the two friends set up a 2D shop. "We took all the jobs no one else wanted (read: no budget), and we hung in there," Alcorn described. "Somehow, somehow, something would come in and pay the bills. Every week, we would meet in John's kitchen and ask each other, 'How much longer do you want to do this?'"

Eventually, the clients became higher profile, American Airlines, Southwestern Bell, and Mary Kay Cosmetics. It was a project for this flamboyant queen of cosmetology that took Alcorn and Davis to the next dimension. "They wanted dancing bottles of suntan lotion playing volleyball on the beach," Davis

described. DNA needed a cost effective 3D animation program with bones. "That's when we discovered LightWave."

Meanwhile, as the business ebbed and flowed, the animating duet (joined by artist/pal Paul Claerhout) pooled their artistic and storytelling talents to create in-house independent shorts (often PG-13, if not R rated). Often, Alcorn and Davis also composed, played, and sang the music in the productions. "We always had after hours projects," said Alcorn. "We averaged one a year. We liked doing our own stuff - not safe, not dictated by a client." These homegrown projects with their quirky sense of humor started gaining DNA national recognition.

Friend and fellow Texan underground animator Mike Judge (*Beavis and Butthead*) turned them on to Spike and Mike's Sick & Twisted Animation Festival. DNA's *Nanna & Lil' Puss Puss* (a black and white 2D Gilbert Sheltonesque cartoon about a mental grandma and a demented cat) appeared there in 1991 and on MTV's *Cartoon Sushi*. The latest edition, *Nanna's Fun Chest* is preparing to make the film festival rounds and a Nanthology of the ten Nanna programs is planned for video release.

"I really think the stuff we did in our spare time is what propelled us to where we are now," Alcorn concluded. "It paid off to take a chance." In 1994, DNA created a series of shorts that appeared on Roseanne's *Saturday Night Special* (Fox TV).

In 1995, a 40-second promo about a pre-teen rocket scientist with the soft-swirl yogurt hair-do fired the DNA ship into Hollywood's orbit. *The Adventures of Johnny Quasar* (as *Jimmy Neutron* was known in his younger days) swept NewTek's Wavy Awards, winning Best Character Animation and Best of Show laurels.

The subsequent publicity attracted the attention of Steve Oedekerk - popular screenwriter, actor, director, producer, comedian and LightWave aficionado [see *NewTechniques* June/July 1999] - who always has his eye out for LightWave talent. DNA contributed lots of zany stuff for Oedekerk's 1996 NBC special, *steve.oedekerk.com*; and in 1997, Oedekerk was the creator and executive producer of *Santa vs. the Snowman*, the ABC show that Davis wrote and DNA animated.

But it was the *Quasar* mission that nucleated Oedekerk's attention and imagination. As Executive Producer of the now expanded 13 minute *Jimmy Neutron* pilot, Oedekerk has helped usher the project through the maze of Hollywood meetings and moguls. Originally, it was pitched and designed as a television series. But Nickelodeon was so enamored with the escapades of the Boy Genius and his droid dog, Goddard, that they wanted to make a feature film as well as the series. "To me that's like the Holy Grail - to do a feature," Davis enthused.

So, now after almost five years of scripts and contracts crisscrossing the country, the Neutron countdown has begun. *Interstitials*, the one-or two-minute shorts introducing the rocketeer, will begin appearing this summer on Nickelodeon. When production on the feature blasts off this spring, DNA will have to increase their staff to about 80 animators. Following the Summer 2001 release of the *Boy Genius* at a theater near you, Nickelodeon plans to inaugurate the television series.

It's a great success story, from a Dallas kitchen to a Hollywood boardroom. Davis 'N Alcorn have spliced their creative genes into a 26 million dollar contract and a career traveling at the speed of light. ■■

Tutorial

A STEP-BY-STEP GUIDE TO CREATING MORE PROFESSIONAL PRODUCTIONS

REQUIRES:

LightWave 4.0+

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ISOLATED EFFECTS THROUGH COMPOSITING

by
Troy Griffin

In *Olive, the Other Reindeer* there was a sequence of shots in a bar where the lights dimmed and a reindeer sang a song. For this particular shot, the director wanted the main characters to be followed by a spotlight, retaining their normal colors, while having the extra characters in the background lit in red. At the same time, he wanted the entire room to have a black light effect. In order to accomplish this shot effectively, we had to use compositing techniques. If we hadn't composited the shot, it would have become a very muddy looking mess.

How That Was Done

The entire scene was broken down into two layers. The first layer contained all the bar ele-

ments: bar, tables, chairs, jukebox, and room. The main characters were put in the second layer.

Because there was a spotlight hitting the floor and following the characters, the first layer (bar elements) had to be rendered as a background sequence

Then for the second layer, a red spotlight was used to light the extra characters and the same spotlight from the first layer lit the main characters. When the background sequence was loaded it was noticed that there were three places where the characters needed to be able to go behind the bar elements. To do this, geometry was created in the shape of the

objects that the characters were going to be behind. These were placed in front of the characters. Then a Front Projection Image map was applied to the new geometry using the background sequence for the image. This gave the illusion that some of the characters were behind certain objects, when in fact it was just a background image.

This was one of the easier composite shots done for this project. It used 2 layers and only a few front image maps. More complex shots used 4 or 5 layers, a front image sequence, lots of front image maps, and multiple backgrounds.

Dreaming In Black & White and Color

Let's try to accomplish something similar with a different scenario. Let's say you have a dream sequence where the room elements fade to black & white, but the characters remain in color.

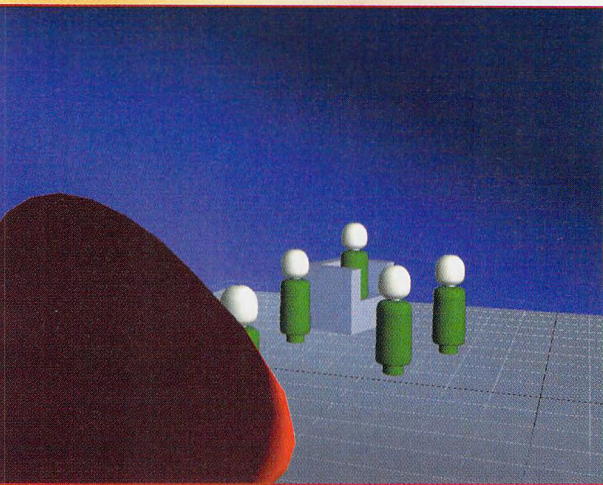
The Setup

Object and scene files needed for this tutorial are available in the Downloads section of this issue's online bonus area. We'll just be

Olive, the Other Reindeer



Figure 1



Click [Use Envelope].

We have now just made the shot start out in color and fade, over 20 frames, to black & white. Pretty simple, but it's not quite what we want. If you render a preview [F9] of frame 20, you'll see that everything, including the characters, was effected. In order to keep the characters in color, we will have to render out parts of the scene separately and then composite them back together.

NOTE: Remember that for this technique to work, it is imperative that you don't change the camera and light settings or positions at any point through this process. If you do, you'll have some continuity problems when the final compositing is done.

using some very simple objects for this tutorial. The elements include:

- **Characters:** made with the lathe tool
- **Room:** A box object with the polygons flipped
- **Chair:** A booleaned box
- **Beanbag:** A distorted sphere object

The scene setup ("all.lws") is also pretty basic: I placed a character in the chair. Cloned a few more and placed them around the chair. Finally, I placed another behind the bean bag and set two key frames so that he would move from behind the bean bag to out in the open (Figure 1).

I made the default light a Spot light, with Shadow Type set to Shadow Map and using a Shadow Map Size of 1200. The light was positioned from the Top view to the bottom right corner of the room, and from the Front view I moved it on the Y-axis to the upper corner of the room. I also rotated it so that the light was falling upon the objects.

Entering the Dream State

1. We'll start by setting up the effect of fading from color to black & white. From the [Scene] panel, [Load Scene] "all.lws". Go to [Effects] [Image Processing], and click on the Color Saturation [E]nvelope. Frame 0 should already be set at 100%. [Create] a key at frame 20 and set it's Current Value to 0%.

2. Our goal in creating the background sequence is to render only the parts that we want to fade to black & white. We could just remove the characters, but then we wouldn't have any shadows after we composited the shot. The solution is to make the characters invisible, yet still cast shadows. Go to the [Surfaces] panel and select the "head" surface. Set Transparency to 100% and make sure that the Specular Level is at 0%. Do the same for the "body" surface.

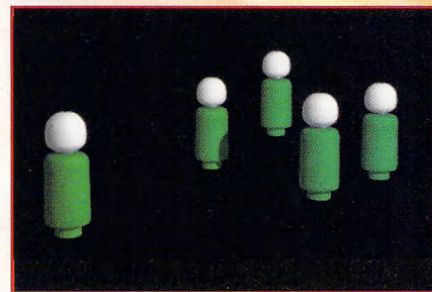
Press [F9] to do a test render. You will now see that the characters are gone, but that their shadows are visible. This is because we are using Shadow Map lights, which ignore Transparency settings. So, the shadows get cast, even though the objects are invisible.

Now we're ready to render out this sequence. Go to the [Render] panel and use [Save RGB Images] to set your output directory. Also, select

your RGB Image Format; I used [24-bit Targa (.tga)]. Now [Render] the scene.

3. Now we can bring our background into LightWave, but first we need to prepare our scene. Set the character "head" and "body" surface Transparency back to 0%. From the [Object] panel, [Clear Object] the beanbag, chair and room objects. So that the characters don't fade to black & white, go to [Effects] [Image Processing] and [Remove Envelope] the Color Saturation envelope. Set Color Saturation back to 100%. Press [F9]. Only the

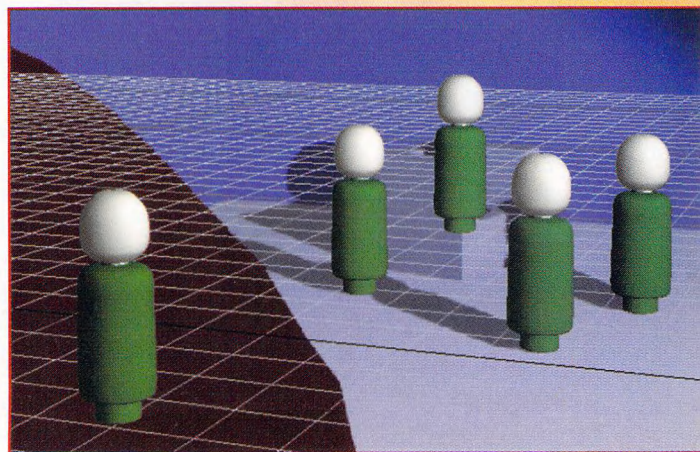
Figure 2



characters should be rendered and they should be in color (Figure 2).

Go to the [Images] panel and click [Load Sequence]. Locate your background images, select the first, and click [Open]. Now go to [Effects] [Compositing] and select the background sequence in the Background Image slot. So that you can see the background displayed in Layout, go to [Options] [Layout

Figure 3

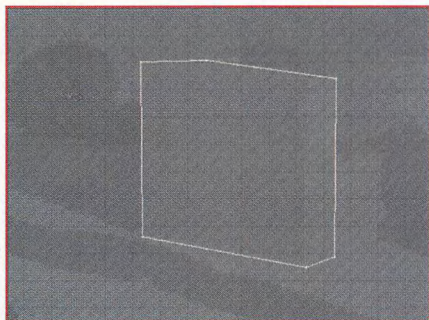


Tutorial

View] and set Layout Background to [BG Image].

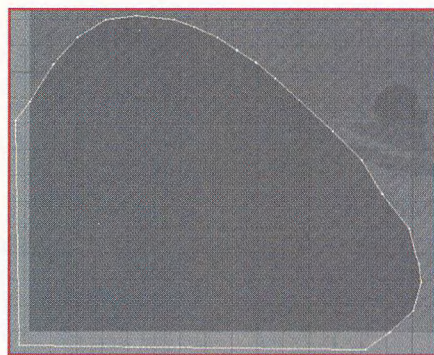
If you test render this, or even just look at it in Layout (Figure 3), you will notice that the characters in the chair, and behind the beanbag, now appear in front of those objects. We can cheat a little using some simple geometry to correct this problem.

Figure 4



4. In Modeler, under [Display] [Backdrop], [Load] the first image of your background sequence, and select the [Z] axis. You may need to adjust the Contrast setting a bit so that you can see the edges of the chair and beanbag objects clearly.

Figure 5



Let's start with the chair first. What we want to do is make a mask of the front side of the chair. [Zoom] into the area where the chair

Amiga LightWave Notes

In Step 4:

- [Backdrop] is labeled [BG Image]
- The [Pen] tool is not available, use the [Sketch] tool instead.



Figure 6

is in the Face View. Under [Objects], use the [Pen] tool to draw around the area where you want to hide the character in the chair (Figure 4). [Make] the object. Under [Polygon], click [Surface] and give it a name of "Background_Mask". [Save As] this object as "chair_mask.lwo".

To make a mask for the beanbag, select a new layer and [Zoom] in on the beanbag. Use the [Pen] tool to draw around the beanbag (Figure 5). [Make] the object and give it the same surface name as the chair.

The surfaces are going to be the same for both objects so it is okay to name them the same. [Save As] this object as "beanbag_mask.lwo".

5. Back in Layout [Objects], [Load Object] the two mask objects. Make sure you're in the [Camera] view and try to arrange the masks in their proper locations. The objects may not load in with the same scale so you may need to [Size] them. This can get kind of tricky if your camera is positioned at a diagonal. Hint: Position the mask parallel to the camera before you start to move it into position. That will make the task a little easier. Also, so you can see the edges better, change the view to [Wireframe]. You don't have to get these masks positioned perfectly, just really close (Figure 6).

Press [F9]. You will see that the actual masks are visible, which is not what we want.

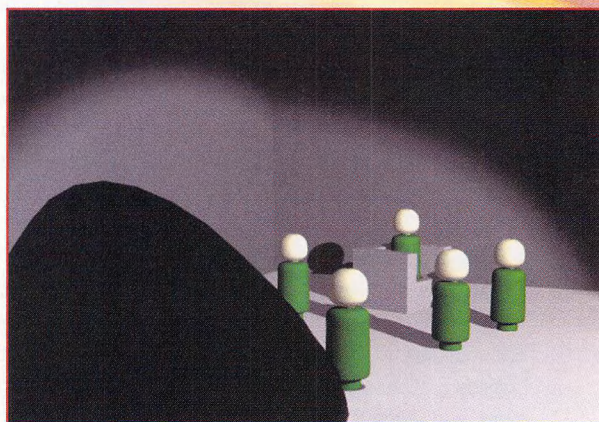


Figure 7

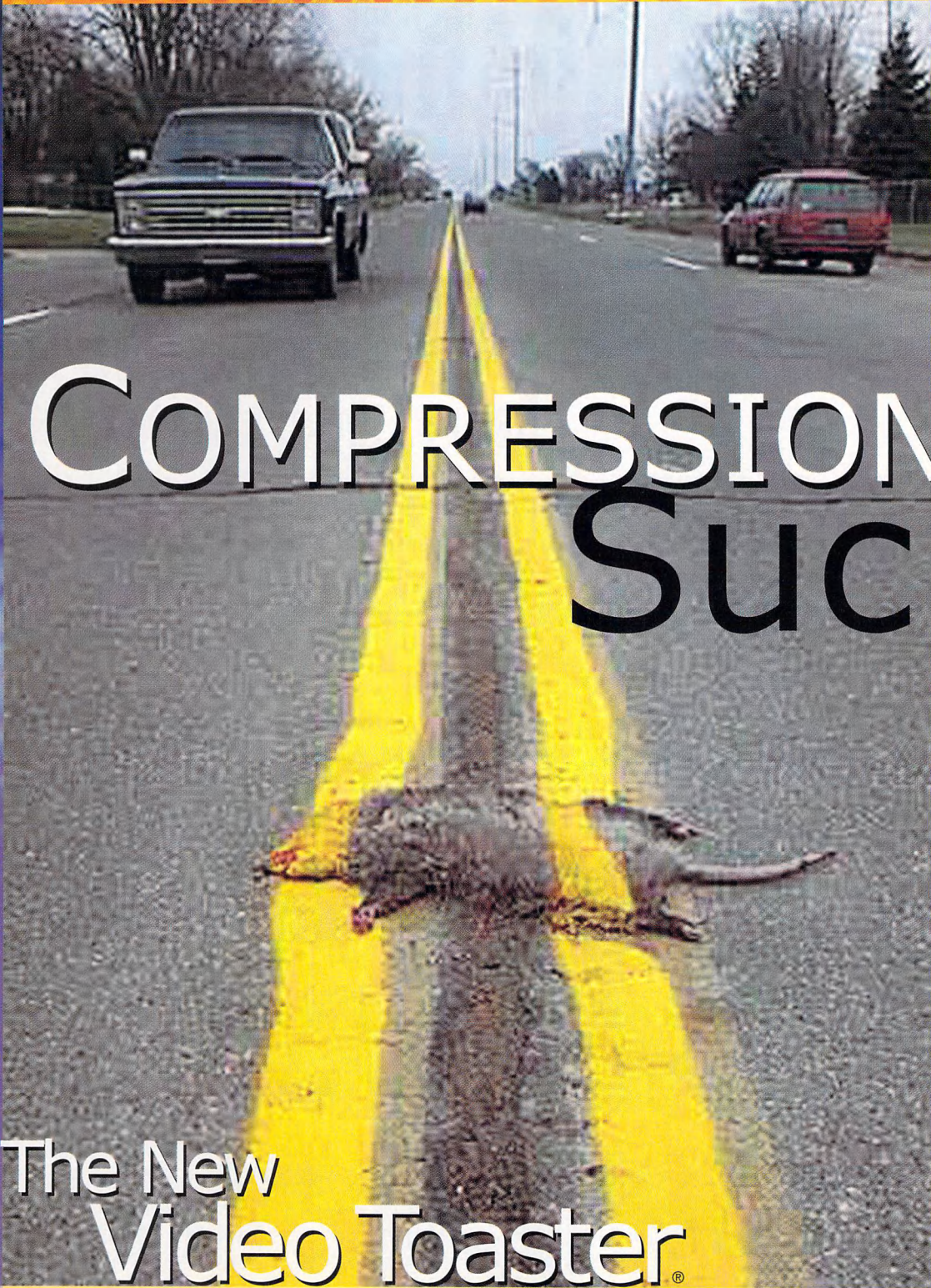
Go to the [Surfaces] panel and select the "Background_Mask". Set the Luminosity to 100% and the Diffuse Level to 0%. Click the [T] next to the Surface Color. Set the Texture Type to [Front Projection Image Map], and set the Texture Image to the background sequence.

That should be it. Render your final scene. If all went well, you will see that your characters are behind the objects that they need to be behind, and they stay in color while their environment fades to black & white (Figure 7).

This kind of technique can be used to create all kinds of fun effects. Feel free to experiment by adding additional layers with different effects.

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THE ROAD TO UNCOMPRESSED NLE

By
Kevin Hanley

A Long Time Toaster/Flyer User Reviews the NEW Video Toaster

There I was... seated in the front row of a technology preview at the 1999 National Association of Broadcasters convention (NAB) in Las Vegas. After years of kicking, screaming, and begging, I found myself drooling over what I saw on the projection screen.

I've been a a Flyer user since its pre-release days, and I was a pre-release Flyer user. As much as I have loved my Flyer, and with as many jaws as I have seen drop to the floor while I sped around the interface editing project after project, I must admit that I have had more than my share of visions of what the Toaster/Flyer could be with a little modern technology and development. Don't get me wrong, my Amiga boots up much faster than my Windows NT systems, and the Flyer runs circles around my Windows edit systems in

terms of pure speed and convenience; but everything that happens in between isn't so hot. I'm burned out from the number of times I've had to explain to clients that the Toaster/Flyer runs on an independent platform, and how I have to use workarounds to achieve what PC and Mac systems can do with current software offerings. So I'd been hoping for years that NewTek would come through with a Video Toaster and/or Flyer for the PC.

So there I was, staring at the best-case scenario at the NewTek preview session. It was, at

the time, the soon-to-be-released Video Toaster NT. Today, it's on my desktop, but now it's called the New Video Toaster. It's hip, it's fast, it's upgradeable, and it's very, very cool. There's plenty of "New" in the New Video Toaster, especially for those of us who have been using the Amiga Toaster/Flyer.

The October/November 1999 issue of NewTechniques contained an excellent article outlining the features of the New Video Toaster, so if you missed it the first time, go back and read it! I'll be taking a more in depth look from the perspective of a long time Toaster/Flyer user.

The Hardware

The New Video Toaster includes a PCI card that works with Windows NT computer systems. There are two cables that can be configured for input and output of Composite, S-Video, or Component video - right out of the box. One end of each cable has a VGA style connector that attaches directly to the back of the Toaster card. The other end contains a series of BNC connectors that can be connected to your decks or patch bay. It's quite nice to have S-Video and Component video without having to use adapter cards. The Amiga Toaster, by its very design, was only set up for Composite video. There is definitely a visual difference in quality when you step up to S-



Video or Component. Also, remember that the New Video Toaster doesn't require Time Base Correctors (TBC). You can hook up your gear and get right to work! There is also, Proc Amp control provided while digitizing video.

Perhaps the biggest feature of the New Video Toaster is the fact that it records, plays back, and edits UNCOMPRESSED video. There are few products on the market today that can boast such a feature - especially at this price.

The Software

The software suite includes Aura VT, LightWave VT, ToasterScope, ToasterVision, VT Director, and Speed Razor SE.

Aura VT

Aura VT is, at its core, a 2D paint program. Users of the Amiga Toaster can think of it as a much enhanced ToasterPaint. As I've used Aura VT more and more, I've come to appreciate that it's not just a paint program. Features, such as layer based compositing and 2D animation make it a very powerful tool. I've found the Keyframer to be very useful as well. It allows keyframe based animation, and is equipped with Z-axis control, which perhaps makes Aura a 2/D paint program. On the Amiga Toaster, you would have to use LightWave 3D to be able to accomplish this kind of animation. It's nice to have it right in the paint program. The New Video Toaster's uncompressed video format (.rtv) is supported, as are Amiga FlyerClips, and other standard video and still formats. It's a nice change to be able to import digitized video, manipulate it, paint on it, apply effects, add static or moving text, and export for editing - all in one program.

I was pleasantly surprised by the inclusion of a very cool utility called Key Toaster. This plug-in lets you digitize video, as well as grab stills, directly in Aura VT.

Although Aura VT is not a true CG program, it is equipped with an excellent text tool. Parameters include: X Scale, Italic, Rotate, Track, Opacity, Space, Outline, Border and Glow. You won't find it to be a good substitute for ToasterCG simply because it's not designed to be a CG program. For example, you can only create one line of text at a time. Then you must stamp it down as a brush, which is not editable. On the other hand,

ToasterCG couldn't animate text, and Aura VT can.

LightWave VT

LightWave VT is a scaled-back version of LightWave 3D, comparable in its feature set to Inspire 3D. Basically, this means that there are a few missing high-end features. The thinking is that these functions would only be needed by expert LightWave animators, who would already have the full version of LightWave anyway. There are, however, two curious exclusions. First of all, Modeler does not allow you to load an image into the background. For years, many Amiga Toaster users have used a background image as a way to trace scanned logos, edit them, and export them as 3D objects. Hopefully, NewTek will reconsider this omission. Also, some Flyer users have complained about the inability to work at D2 resolution. This is probably an oversight, since there is FlyerClip support included with LightWave VT. Hopefully, this will also be fixed to allow more compatibility between the new and old Toasters.

As with Aura VT, LightWave VT offers full support for the Video Toaster's .rtv video file format. This allows you to load your uncompressed video clips as surface textures as well as outputting your final animation for use in Aura VT or Speed Razor.

ToasterScope

ToasterScope replaces yet another card that many Toaster users have in their Amigas, the Waveform Monitor/Vectorscope. ToasterScope opens in it's own window, and can monitor your input or output video signal in a variety of ways. I like the fact that you can choose whether to monitor the input or the output. To do that on my Amiga Toaster/Flyer system, I would have to reconfigure cables. On the New Video Toaster, it's just a click of the mouse.

I would like to see Proc Amp controls on the ToasterScope window, just for the sake of convenience.

ToasterVision

ToasterVision is one of the nicest features of the Toaster's software suite. ToasterVision opens a window on your computer monitor that shows your Toaster input or output at full reso-

lution, 60

fields per second! If

you want, you can use ToasterVision as a replacement for your NTSC Program monitor. I've found it to be quite accurate and decided to use a dual monitor configuration on my host computer with ToasterVision. I have had times when I wanted to see a real NTSC display; but for the most part, ToasterVision gets a lot of use on my system.

VT Director

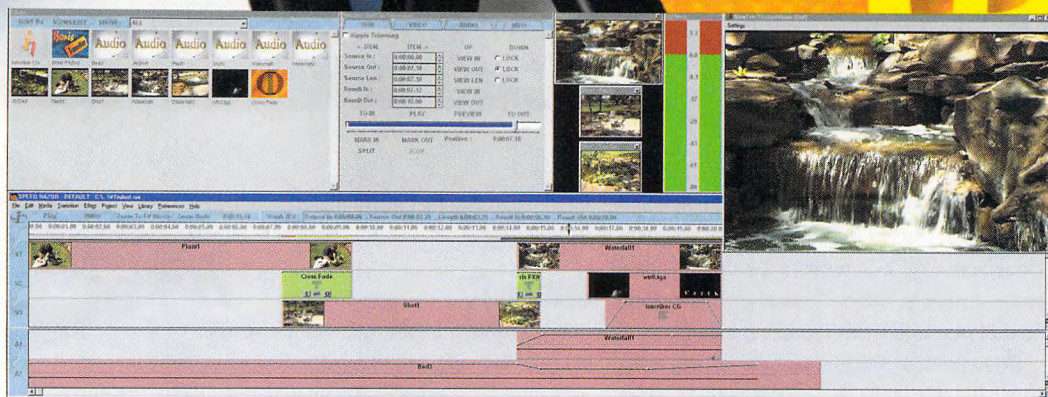
VT Director is an application that allows you to open ToasterVision windows, change Proc Amp settings, digitize video, and more from an icon on your taskbar's system tray.

Speed Razor SE

Speed Razor is a very popular timeline editor - widely respected in the desktop video community. For Toaster/Flyer users, Speed Razor is undoubtedly the biggest learning curve of the new software suite. There are great fundamental differences between storyboard editing and timeline editing. The Flyer's storyboard is a very efficient way to edit, but NewTek has always been criticized for not including a timeline view. By contrast, Speed Razor only features a timeline edit interface, so there's an altogether different way of working involved. Speed Razor does allow you to organize it's Library window, where your source files are located, into an icon view and move your files into a particular order. You can then select all or some of your files and drag them to the timeline to create a rough, cuts-only edit. It's pseudo-storyboard editing - not a bad way to make the transition from storyboard to timeline editing.

Perhaps the next most obvious difference is that the Flyer is dual-stream and real-time. The New Video Toaster is a single stream (for now) system with rendered effects. The bonus though, is that having uncompressed video means absolutely no degradation when transitions or effects are rendered. You can stack





layer upon layer of video, CG, or whatever, render it, and it looks as pristine as the original footage. While the Flyer does have an excellent compression scheme, rendered and re-rendered video shows signs of degradation. As for rendering, I have found that Speed Razor's transitions render at a ratio of about 1:3 (dependent on your system speed). That is, a 1 second dissolve takes 3 seconds to render. There are two things to remember here. First, once an effect or transition is rendered, you will not have to render again unless you make changes to the effect/transition. Also, the rendering is not performed until you tell it to. On the Flyer, just starting to play forces "heads and tails" to be written before playback begins. On a long project, this can be annoying. Therefore, Speed Razor can actually be quicker while the nitty gritty editing is going on. You simply hit play, and it plays. One ironic thing about rendering is that the Flyer, which is real-time, actually needs rendering in order to accomplish a dissolve under a CG key page, or two quick effects in a row. So when we have real-time, we want rendering. When we have rendering, we want real-time! After trying both, I'll take the rendering.

Of course, there are many other differences between the Flyer editor and Speed Razor, and it's pretty much all good news! First of all, you have an unlimited number of video and audio tracks. Transitions can occupy any video track and to use one you simply drop a transition between to video or graphic sources. You can stack CG tracks on top of video. You can also apply motion, transparency, cropping, and

more to video tracks within the timeline interface. There's only 3 ways to do that on the Flyer: LightWave 3D, LightWave 3D, or LightWave 3D; and none of us want to sit through that kind of render on a daily basis, at least not at the Amiga's speed.

Something else that I love about Speed Razor is that you can use a series of Targa (.tga) images as a video track, but with alpha channel transparency intact. My favorite use of this is to use Aura VT's Keyframer on a text brush to add some cool motion. After rendering as a series of .tga images, I import the resulting images into Speed Razor and key them over video. If it doesn't line up the way I want it to, I can just move it around on the timeline. Again, the only way to do this type of effect on the Flyer is LightWave 3D. It would generally be a long render, and if you don't like it, you would have to make changes and re-render. A re-render in Speed Razor takes seconds instead of minutes or hours. You can see how a complicated project could take much more time on the Amiga Toaster/Flyer than with Speed Razor.

Speed Razor, like the Flyer, uses a separate hard drive for audio. Therefore, there is generally no rendering for audio playback. What the Flyer doesn't have (without 3rd Party software, anyway) is a good way to ramp audio levels up and down. Speed Razor allows you to add nodes to manually adjust the audio level wherever and whenever you like. In fact, the same

type of nodes can be used to adjust the opacity of a video clip for really cool layering effects!

Have Notes

Right now, there is one big thing the Amiga Toaster is that the New Video Toaster is not. A switcher. NewTek has made no secret, however, of the fact that it plans to have a 16-input Switcher in the near future, complete with a hardware Break-out Box. For now, if the Toaster's Switcher is the centerpiece of your setup, you'll want to keep your Amiga Toaster right where it is, and either add the New Video Toaster as your fancy, hip new NLE, or wait a little while longer for the Switcher's release and then buy both.

Conclusions

Aside from money, I can see no reason not to upgrade to the New Video Toaster. If and when you do, make sure to read the manuals and follow the tutorials on the NewTek CDs. Also, there are already tutorial videos available from Desktop Images that feature the great Don Ballance showing how to use this wonderful piece of gear.

Like the Amiga Toaster/Flyer, the New Video Toaster seems to get better and better each time I use it. Uncompressed video solves the problems that are often encountered with the Flyer, particularly with very detailed images. Uncompressed graphics also look very, very good - much cleaner than Framestores, Flyer Stills, and ToasterCG pages.

I've really enjoyed the freedom of unlimited tracks of video in Speed Razor, and I love the interaction between Aura VT, LightWave VT, and Speed Razor. My Flyer still lives on as an extra NLE, but there's no doubt that the New Video Toaster is the first step in a very bright future of desktop video. It has helped my company attain a very high-end look, at a very reasonable price.

KEVIN'S VIDEO TOASTER SYSTEM

Motherboard Asus
Processors Dual Pentium III at 500mHz
Memory Running fine on 128 MB or RAM, but as RAM prices fall back down, I'll want 256 MB or 512 MB.
Graphics Matrox G400 with dual display activated.
Audio Ensoniq PCI
HD Controller Adaptec 2940 UWPro
Hard Drives 3 x IBM UltraStars (18 GB), 1 x Quantum Atlas III (18 GB). As a stripe set, the four drives are operating very reliably with no dropped frames.

Kevin Hanley is the owner of Creative Video Works.
 You can email him at kevin@creativevideoworks.com

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THE PATH TO A NEW MILLENNIUM



The Amiga Toaster/Flyer Upgrade in Review

Since rumors of the Millennium project started last year, Toaster and Flyer users have been patiently anticipating, and some even drooling over the prospects of this release - and with good reason.

Millennium was a huge endeavor, pooling the resources of NewTek and many developers to create a comprehensive set of tools, scripts, effects, wipes, fonts, and backgrounds; with the goal of a dramatic upgrade for any Toaster and/or Flyer owner.

What's In The Box?

Millennium comes with three CD-ROMS and a 120 page manual, complete with tutorials, printed on standard three-ring punched pages - no binder. To get you started, a video introduces you to some of the applications, effects and moving backgrounds. There's also a catalog of third party Toaster/Flyer products to peruse.

Reason For Concern?

One of the big concerns about Millennium was voiced by users who already own some of the applications. Others suspected Millennium would just be a bunch of Lite versions of existing software. No need for concern, with only one exception, all the pre-existing applications in Millennium are the full versions and many have been bug-fixed or have added features.

That said, I did have a couple initial concerns which I'll explain as I go.

What's On The CD-ROMS?

Lots! In fact, there's so much stuff I can't even begin to cover everything in detail here. I recommend that you also read "Millennium is Coming" in the August/September 1999 issue for more information.

Electric Scene Knife

This is a new tool that is intended to auto-detect scene changes in a FlyerClip and divide it into separate clips. Basically, the program examines data rate changes and will mark a scene break wherever the rate exceeds a given delta value. This is great - in theory. But does it work?

I required the author's assistance to get this to run on my system; but, once it was working I did several delta value tests using typical video shots strung together. For me, the results weren't great. Perhaps my inexperience with the nuances of the delta setting makes for an unfair evaluation. No one setting is going to work for every kind of video. So I found myself wondering, if it wouldn't still be quicker for me to just scrub through myself?

Is it a time saver? It could be. I think the





use-fulness of this tool will really depend heavily on the kind of video you shoot.

One great feature is that you can do delta value tests without having to actually cut anything. This preview process shows thumbnail images so you can see at a glance how it would be cut. One complaint is that the program doesn't tell you it's doing anything. Other than listening for hard drive noises, there is no way to tell that an operation is underway.

Flyer Menu

This is another new tool. It's a simple but time-saving add-on, which gives the switcher screen a series of pull-down menus to allow easy access to third party applications. This can also help avoid problems with insufficient CHIP memory when used with applications such as Control Tower.

Wipe Studio

This is the tool you need to create custom wipes, such as for client logos. Anxious to do that very thing, I jumped right in; but was quickly frightened off by the complexity of the program. This is one application that definitely requires you to read the manual. As busy as I am, I prefer the more obvious approach to learning. Fortunately for me, rumor has it that a "Beyond the Millennium" follow-up tutorial video will include help for this tool.

Control Tower Lite

With more than a hundred scripts at your fingertips, this is the Swiss army knife of Toaster/Flyer tools. For those times when you have multiple images, or need to perform a similar operation on many different files, this is the tool to use.

The non-Lite version also includes numerous scripts to access ImageFX directly from the Toaster/Flyer. Unfortunately, these were removed from the Millennium release. A very disappointing decision.

Lots More Tools

Other tools include Flyer Backup: A script based project copier; CG Pilot: Scripts that

automate many CG tasks; Fast Frames: Toasterizes your Flyer by pre-recording CG sequences, Framestore montages, creates flying CG effects and more; Title Tools: helps design Fast Frame sequences; Super Clips: uses RenderFX to superimpose animated Fast Frames CG over other video clips; Key Player: Uses the luminance keyer to superimpose a sequence of flying CG Framestores over incoming video; Fast Fuel Millennium: Video deck controller; ViFly: extended programming environment; Join Frames: Builds an accurately timed animation from a series of Framestores; Pick Frames: Uses motion removal to create stills from video clips; RenderFX; ProMix; OZ tools; and the list goes on...

Effects and Wipes

There's too many effects here to score individually, but I'd estimate that half of them are what I would rate good - meaning they are effects that could be used very readily in many types of productions. Some of the other effects might be suitable for specific circumstances; but on a limited basis. In any big collection like this, there are bound to be some duds - Millennium is no exception. There are some here which have no appeal to me. 43 Atari effects? What were these people thinking? My favorites are in the Organic, Transparent, and Swirls directories.

The 4.x effects break down as follows (Color+Matte): Animals (6+6), Atari (22+6), Atari Games (21+0), Bars (21+4), Blinds (4+0), Breakapart (0+3), Business (5+3), Effects (9+0), Fire (5+3), Flying Shapes (5+4), Geometric (8+7), Hearts (4+0), Holidays (18+12), Media (7+4), Military (6+4), Misc (32+14), Music (2+1), Nature (3+3), Organic (16+0), Originals (132+0), Page Peels (4+4), People (21+15), Space (2+0), Sports (25+22), Swirls (8+0), Symbols (9+8), Toys (3+3), Transparent (20+0), Transportation (17+14), Wedding (28+12), and Wipes (20+3).

The Originals directory includes 109 effects that were also in other directories. Not counting duplicates, 4.x users get 374 Color and 155 Matte effects; 3.x users get 154 Color and 61 Matte.

I was initially very disappointed that many of the effects did not have croutons. This turned out to be a fixable file name problem.

fonts! 80 MBs worth. This is more than anybody would ever need. But, if there's something special you're needing, it's probably here.

Many of these fonts, or at least similar ones, are available freely from online resources. The advantage here is that these are conveniently located in one place.

Also a plus, is a series of ToasterCG Scroll Page Books that allow you to see a sample of every font. Some of these CG Books loaded into my system okay, and some needed some tweaking to get them to work. Although it's easy enough to browse fonts in this manner, some Books take much too long to load. I would have preferred to see these font samples in print form, or as image files that I could have viewed individually or printed.

Backgrounds

Also included are 306 backgrounds in Framestore format, for use in ToasterCG or ToasterPaint. There are also 28 FlyerClips, which could be used as looping backgrounds, including several great ones from Pyromania. Plus there's a few image sequences, too. All great stuff!

Problems Solved PLUS a Surprise!

I'm pleased to say that all of the problems I encountered in reviewing Millennium have been fixed and an update archive is available in the Downloads section of this issue's online bonus area. And that's not all! Those of you who upgraded to Toaster 4.x, will be very pleased with the surprise inclusion of the long missed Trail effects from Toaster 2/3.x - all of them!

Conclusions

In terms of the sheer weight of numbers, this is quite an impressive package. The many tools will give you more power than ever before to create top quality video productions - and to do it in less time.

Admittedly, I already had some of the stuff in Millennium, but there's still a lot more that I look forward to putting to use. Millennium is a gold mine for all Toaster/Flyer owners, regardless of what applications you may have previously purchased. At \$349.95 you really can't go wrong.

Bob Ketchum is the owner of Cedar Crest Studio.
You can email him at cedarcrest@oznet.com

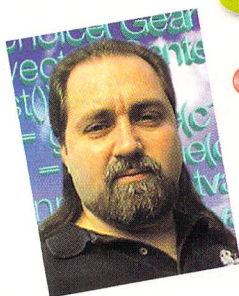
Fonts

Three thousand one hundred and eighty

Plugged In

LIGHTWAVE ADVANCEMENTS THROUGH PLUG-IN SCRIPT WRITING

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A FREE TORNADO
PLUG-IN FOR
LIGHTWAVE
by Bob Hood

CONTROLLING NATURE: BUILDING A TORNADO

Animation is an exercise in control. When you bring things to life through animation that have never before existed, you have absolute control over how those things will move, react, live, or even die. More interesting still, I think, is when you do the same thing with natural phenomena, like earthquakes or hurricanes. Simulating such powerful forces through animation gives you a control over nature that, like the animation itself, will never exist in reality.

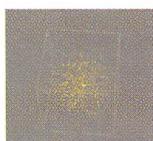


Figure 1: The Particle Cluster

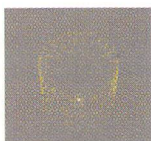


Figure 2: Applying The Rotation

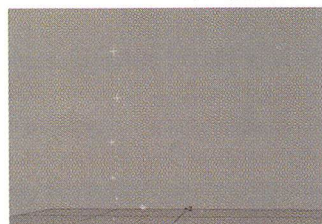


Figure 3: A Spine Constructed From Null Objects

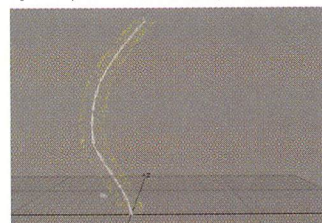


Figure 4a: Using Bones, IK and FSPE With The Tornado! Script

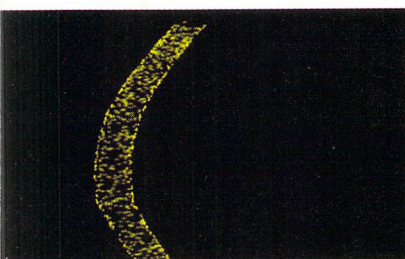


Figure 4b: The 6.5 Minute Render Result

Imitating Life

One of my favorite activities as an animation programmer (and the one for which I seem to have the least amount of time) is simulation programming. The "KaBob" effector that I introduced a few issues back is an example of this type of simulation programming. While it lacked several physics-based attributes, such as gravity and atmospheric influence, it is a good example of the things that can be accomplished when programming for simulation.

Particle animation can also provide a good basis for simulation of natural phenomenon. It can be used to simulate things like sparks, fire, snow, dust, or even swarming insects. LightWave's Procedural Displacement Map architecture provides access to the point positions of a Mesh

object, allowing plug-ins to manage their 3D locations on a frame-by-frame basis. This will be our venue for creating some particle animation. Employing this architecture, and some basic trigonometric math, we can simulate one such natural force that was a common part of my childhood in Eastern Kansas: A tornado.

Spin Doctor

Building a tornado from particles can be done by combining two relatively simple effects. Once combined, these effects will give the tornado its basic shape and behavior. From there, we can build up a more realistic tornado effect by adding small enhancements at strategic locations within the code.

The first effect is that of the ubiquitous spinning debris (or, in

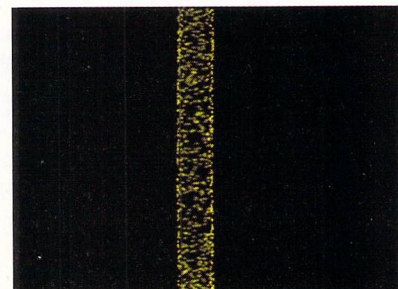
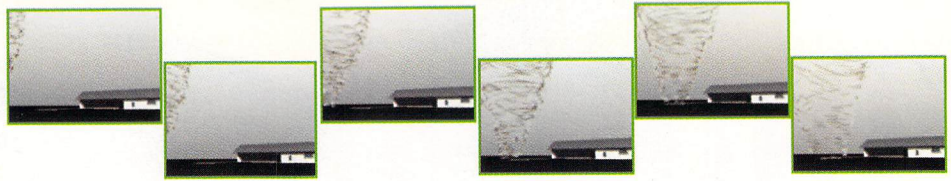


Figure 4c: 12 Second Render Without FSPE

our case, particles). As debris spins around in a tornado, it clings to an invisible and flexible spine. To simulate this, we use some basic trigonometry calculations to position each particle at a random point along the circumference of the circle that surrounds this spine.

Figure 1 shows the object whose particles we will use to generate the animation. This object was created using a Modeler LScript. Notice that the object is comprised only of parti-



cles. There are no planar polygons within the object. In fact, the object in Figure 1 consists of nothing but single-point polygons. Particles can exist either as points, or as single-point polygons. In the former case, however, they will not render in Layout. Converting points into polygons allows them to have surface attributes assigned. With surfaces assigned, the results of our efforts will be visible in the final output.

```
249: objNdx = initial[x,POINTSEGMENT];
250:
251: initial[x,STARTDEGREE] = random(1,359);
252:
253: p = segmentPosition[objNdx];
254:
255: if(objNdx == 1)
256:   low = baseObject.param(WPOSITION,time);
257: else
258:   low = segmentPosition[objNdx - 1];
259:
260: if(objNdx == objCount)
261:   hi = p; // nobody above me, use myself
262: else
263:   hi = segmentPosition[objNdx + 1];
264:
265: initial[x,STARTYPOS] = random(low.y - p.y,hi.y - p.y);
```

Listing 1: Excerpt from the Tornado! LS/DM LScript

For each particle in the object, we generate a random location along the circumference of a circle. This location is specified in degrees, initially somewhere between 1 and 359 (line 251 of Listing 1). This in itself, however, is not enough to actually generate a position for the particle in three-dimensional space. We also need a radius that describes the distance between the particle and the center of the circle. Armed with these two items, we can calculate a circular position for each point. Figure 2 shows the results of applying this calculation to the point in the object.

The calculated position along the circumference of the

circle serves as the starting position for each point. Whenever we have to reset the tornado (when we are at time index 0.0, for instance), we will set each point back to this initial position. To accomplish this, we remember each starting position in a global array (line 265).

In order to spin them, however, we will calculate some degree of increment per time index (which might be a sub-frame, if things like motion blur are used). We then add a mul-

tiple of that calculated increment to each particle's starting position along the circle. This movement multiple is calculated based upon the timeline of the animation. As the timeline progresses, so too does the particle's position along the edge of the circle.

Once the spinning effect is functional, the second effect we need is a simple offset of the particle's position. This offset is the difference between

the particle's position and that of the segment to which it is assigned. This parenting-like offset is enough to wrap the particles around the spine of our simulated tornado.

A Little Backbone

Creating a spine for the tornado simulation to work with can be accomplished with virtually any objects capable of parenting. However, I would recommend that you employ Null objects if you do not intend to make the spine of the tornado visible. Nulls can be easily manipulated and parented, and you don't

adjust their dissolve settings before rendering an animation.

Regardless of the types of objects you use, the base object of the tornado spine, the one to which all other spine objects will be parented, must be labeled "TornadoBase". The Displacement Map LScript will seek out this object when it begins. All children of this object must be parented directly to "TornadoBase", and positioned vertically higher than this base object. Figure 3 shows an example tornado spine constructed from Null objects.

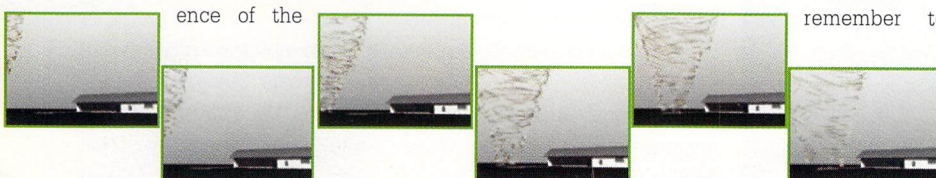
I designed this particle animation script to work with Bones. With Bones, you can employ Inverse Kinematics (IK), which would be an ideal mechanism for manipulating the spine of our simulated tornado. In order to use Bones with this plug-in, you must enable LightWave's Full Scene Parameter Evaluation (FSPE) mode. This mode causes the position of each Bone to be provided to interested plug-ins after IK has been calculated. Without this mode, the Displacement Map script would receive Bone positions before they were offset by IK, giving you a vertical column of particles without variation (even though the Bone chain was bending correctly toward its goal).

Now, the bad news: As implemented within LightWave, FSPE is a brute-force solution that becomes very slow when more than a handful of particles are used. Figure 4a shows 1,000 particles applied to a Bone chain, with IK and FSPE active. Figure 4b shows the rendered result. The total time to render this single frame on a dual PII 350MHz machine using two render threads was about 6.5 minutes. Without FSPE active (thus generating a simple vertical column of particles), it took only 12 seconds (Figure 4c).

Dizzy With Details

The Tornado Displacement Map script that accompanies this article is a bit more involved than other scripts I've created in past installments. Because space limitations prevent me from going into appreciable detail here, I have heavily commented the script so that, if you wish to delve into the actual workings of the

have to remember to



Tutorial

REQUIRES:

LightWave 4.0+

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EVER SPINNING ORBS WITHIN AN ORB

by
Jared Brooks

There's not much preamble for this tutorial, except to say read and learn. The result will be a sphere with glowing inner spheres that move and look interesting. You'll see what I mean as we proceed through the tutorial. We've got a lot to do here, so let's just jump right in.

1. Start Modeler. From [Display], click [Options] and make sure that the Unit System is set to [Metric] and Grid Snap is set to [Standard]. Click [Ok].

Ball Type: Tessellation
Level: 2
Center: X:0, Y:0, Z:0
Radii: X:10 cm, Y:10 cm, Z:10 cm

2. First, we'll create a small sphere. Click [Objects], [Ball] and press [n] to enter the following Numeric parameters:

Click [Ok] to create this ball. Press [Enter] to Make the object and click [Ball] again to deactivate this mode. You should see something similar to Figure 1. Press [q] and give the sphere the Surface Name "Small Sphere Outer". Click [Apply].

Press [c] to copy the current sphere, click on layer 2 (or press [2]), and then press [v] to paste. Press [q] and enter the Surface Name "Small Sphere Inner". Click [Polygon] and [Flip] (or press [f]).

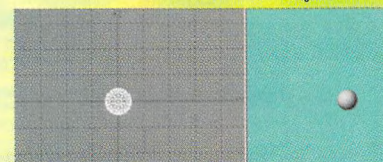
By flipping the polygons, you create an inward-facing surface, so that light passing through the sphere has a surface to hit on the way out.

Now we'll merge the two spheres into one object. While holding [Shift], select layer 1. Both

layers 1 and 2 should now be selected. Press [x], followed by [v]. This cuts both spheres into memory and pastes them into layer 1.

From the [Tools] menu, click Points [Merge]. Select [Automatic] and click [Ok]. A pop-up indicator should tell you that 162 points have been eliminated.

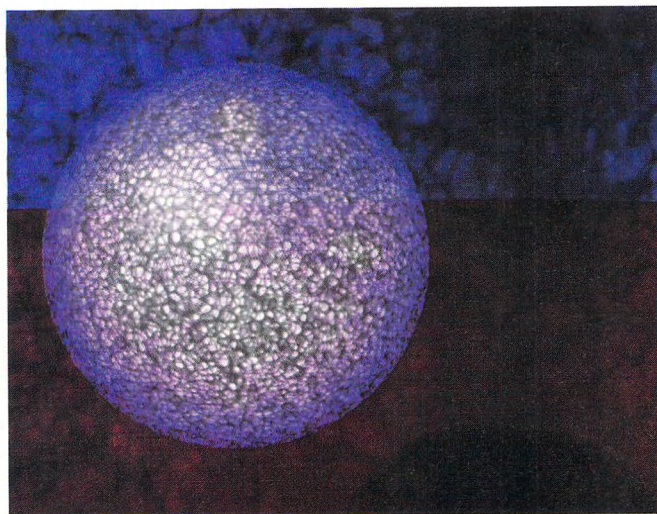
Figure 1



When the spheres are merged together, the overlapping points are eliminated, resulting in a more efficient object. Although the points are merged, the sphere still retains two distinct surfaces; one facing inward and the other facing outward. This way, the inward and outward surfaces can have different indices of refraction.

From the [Objects] panel, [Save As] this object with the name "SmallSphere.lwo".

Okay, now we'll make the larger sphere. The process is similar, except that this time, we'll use some index of refraction trickery. That is, the larger sphere will have



four surfaces. The outermost and innermost surfaces will have the refractive index of glass, while the two surfaces that face in towards each other will have the refractive index of air.

Select layer 2 as the foreground, and layer 1 as the background.

From [Objects], create a new [Ball] object with the following parameters:

Ball Type: Tessellation
Level: 3
Center: X:0, Y:0, Z:0
Radii: X:60 cm, Y:60 cm, Z:60 cm

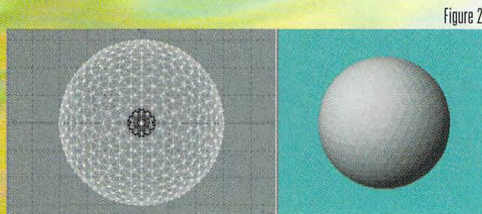


Figure 2

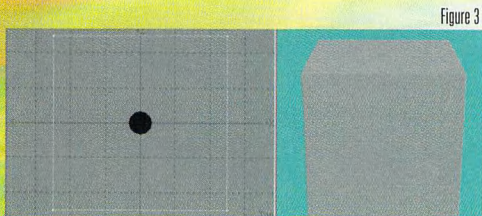


Figure 3

Click [Ok]. Press [Enter] to Make the object. Press [a] to fit the object into the views. You should see something like Figure 2.

Deactivate [Ball]. Give this the Surface Name "Large Sphere RI=Glass".

Press [c], click on layer 3, and press [v] to paste the sphere into layer 3. Name this surface "Large Sphere RI=Air". Press [f] to Flip the polygons.

Select both layers 2 and 3, press [x], [v], followed by [m] to Merge the points. Again, use [Automatic]. This time, 642 points should be eliminated.

That's two surfaces down, now for the other two. Copy the sphere, select layer 3, and paste it. Flip the polygons.

Click [Modify], [Size] and press [n]. Set Factor to 95% and Center at 0,0,0. This slightly reduces the size of the sphere in layer 3.

Select both layers 2 and 3. Cut and Paste the two spheres together (they'll appear in layer 2).

[Save As] this object as "LargeSphere.lwo".

4. All we need now is a simple box to act as a room for the glowing orb to be placed inside. Click on layer 4, and select [Objects] and [Box]. Press [n] and enter these values:

	Low	High	Segments
X	-5 m	5 m	1
Y	-5 m	5 m	2
Z	-5 m	5 m	1

Click [Ok] and press [Enter] to Make this object. Press [a] to fit the object into view. You should see a box like the one in Figure 3. Press [f] to Flip the box polygons inward, to make it into a room.

Next, click on the [Polygons] button at the bottom of the screen to switch to polygon edit mode. In the Face view, use the Right Mouse Button to lasso the top half of the box, as

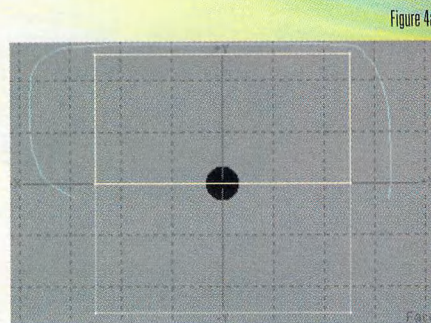


Figure 4a

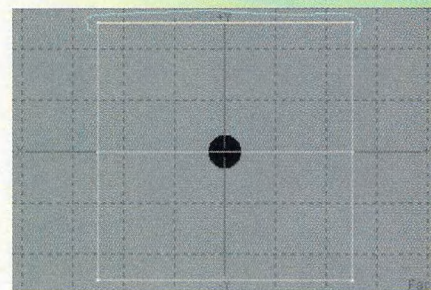


Figure 4b

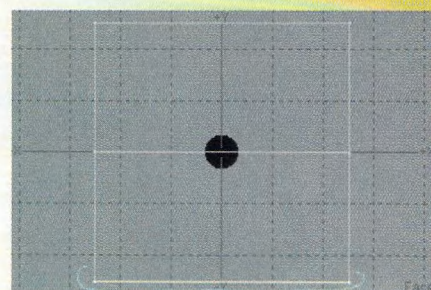


Figure 4c

shown in Figure 4a. Press [q] to give it the surface name "Upper Walls".

Follow this by pressing [Shift-'] to invert the selection, and name this surface "Lower Walls".

Then press [/] to deselect all, and lasso the top polygon as shown in Figure 4b. Name this one "Ceiling".

Finally, press [/] and lasso the bottom polygon as in Figure 4c. Name it "Floor".

[Save As] this object as "CubeRoom.lwo".

5. Now that we have all our objects created, go to Layout and let's build our scene.

On the [Options] panel, disable [Auto Key Adjust], [Auto Key Create], and [Left Mouse Button Item Select]. Also, go to the [Render] Panel, and make sure that you have some type of Render Display enabled (eg. LW_QV or Full Size Window).

6. From the [Objects] panel, [Load Object] the three objects we just created. To get a better look at the spheres, switch to View [Camera]. Also, select [Camera] from the Edit menu, and [Move] from the Mouse menu.

Amiga LightWave Notes

In Step 3:

- Set Factor to 0.95

In Step 5:

- [Auto Key Create] or [Left Mouse Button Item Select] options may not be available. Disable whichever ones are.
- Render Display is on the [Record] panel.

In Step 6:

- Convert Camera positions to metres: 1 cm = .01 m

In Step 8:

- Use Glossiness: LOW
- Surface Samples is not available. Each sphere surface will have to be set manually.

In Step 9:

- Convert Texture Sizes to metres.

In Step 13:

- Convert Object positions to metres.

In Step 14:

- [Trace Shadows] is on the [Camera] panel.

In Step 15:

- Render Display, [Save Animation] and [Save RGB Images] are on the [Record] panel.

Tutorial

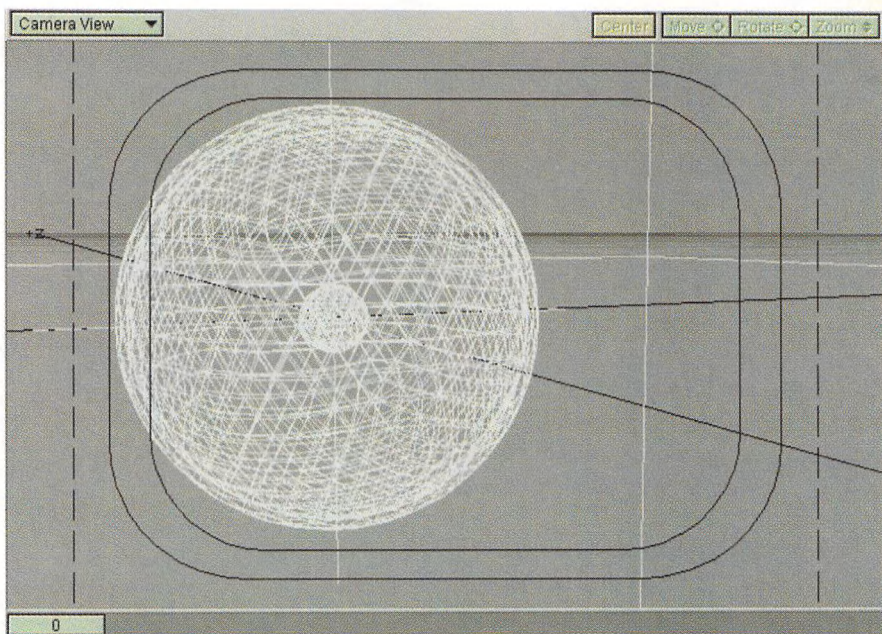


Figure 5

Press [n] and set the following Camera Position: X:-80 cm, Y:25 cm, Z:-2.5 m. Click [Ok], and select [Rotate] from the Mouse menu. Press [n] and enter these values: H:25.0, P:6.0, B:0 degrees. Click [Ok] to use these settings, and press [Enter] twice to keyframe the camera at frame 0.

Figure 5 shows the current Camera view.

1. Next, we need to set up the lighting. On the [Lights] panel, set Light Type to [Spot], Spotlight Cone Angle and Soft Spot Edge Angle to 30 %, and [Light Color] to 255, 255, 255 (white).

Select Edit [Lights] and Mouse [Move], press [n] and position the Light at X:-2 m, Y:2

m, Z:-2 m. [Rotate] the light to H:45.0, P:35.0, B:0 degrees. Press [Enter] twice, to create a keyframe for the light at frame 0.

8. Now we need to give our spheres some basic surfacing. Open the [Surfaces] panel, and set Current Surface to "Small Sphere Inner". Set its surface parameters to:

Surface Color:	255, 255, 255
Luminosity:	0.0 %
Diffuse Level:	80.0 %
Specular Level:	100.0 %
Glossiness:	16
Reflectivity:	0.0 %
Transparency:	100 %
Refractive Index:	1.6 (flint glass)
Smoothing:	On

Also, apply these settings to the other three Sphere surfaces. A quick way to do this is to use the Surface Samples section on the [Render] panel. From there, switch to the surface that you want to apply the settings to, click on the Sample Render, and answer [Yes] when asked, "Copy surface settings from this sample to the current surface?"

We'll be keeping the smaller sphere's

Refractive Indices set to that of glass. However, the larger sphere needs to have its index of refraction set to that of air. After all, it's the larger sphere that the viewer will be looking directly at. Set Current Surface to "Large Sphere RI=Air", and set its Refractive Index to 1.0.

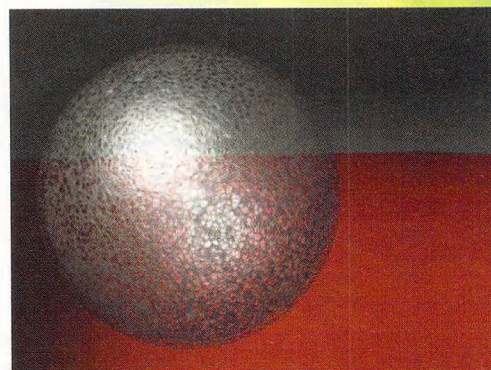
We could use a little color in our room, so set the Current Surface to "Lower Walls", and set its [Surface Color] to bright red (R:255, G:30, B:40). Leave the others at the default light grey (R/G/B:200).

Pressing [F9] gives us a look at what we have so far (Figure 6). It's pretty plain, but not for long.

9. Set the Current Surface to "Small Sphere Inner", and click on the [T] next to the Transparency. Set the texture parameters as follows:

Texture Type:	Veins
Texture Opacity:	100 %
Texture Size:	X:3 cm, Y:3 cm, Z:3 cm
Texture Value:	75 %
Coverage:	0.1
Ledge Level:	0.1
Ledge Width:	0.3
Bump Strength:	0.5

Figure 7



Do the same thing for the other three Sphere surfaces. You can copy the settings from one texture to the next using Surface Samples, as before; but don't forget to set the "Large Sphere RI=Air" texture's Refractive Index back to 1.0.

Press [F9] to take a look at the textured sphere (Figure 7).

Figure 6



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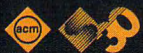
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Web #104

10. Our lighting could use some excitement. On the [Lights] panel, set the Ambient Intensity to 0 and Light Intensity to 20 %.

Let's also prepare some blue lighting for the inside of the sphere. Click [Add Light], and [Rename Light] to "Sphere Light". Try the following settings:

Light Color:	R:100, G:78, B:248.
Light Intensity:	100 %
Light Type:	Point
Intensity Falloff:	Enabled
Maximum Range:	8 m

Figure 8 shows the result of another test render. As you can see, we're starting to get somewhere now.

11. Currently, we have only one small sphere inside the larger sphere. We're going to have a total of three small spheres, each with their own light. You might wonder why we need so much light, but when we switch on Trace Shadows, you'll see why. Let's get to it.

Open the [Objects] panel, and set Current Object to "SmallSphere.lwo". Click on [Clone Object], and make 2 clones. Open the [Lights]

panel, and select "Sphere Light" as the Current Light. [Clone Light] 2 clones.

Next, we need to create some null objects. These will help us control the movement of the various spheres, as well as tie the spheres to a single pivot point that we can move or rotate around in Layout.

On the [Objects] panel, click on [Add Null Object], and [Save Object]. Give the Null the name "Spheres Master NULL". Layout only uses Save Object for naming nulls. Don't worry, you won't end up with a bunch of nulls on your hard drive. [Add Null Object] again, and [Save Object] as "Small Sphere NULL". Close the Objects panel and brace yourself, it's time for some parenting madness.

12. Make sure Edit [Objects] is selected, and set the Selected Item to

"LargeSphere.lwo". Click on [Parent] and select "Spheres Master NULL". Click [Ok]. Also, parent "Small Sphere NULL" to "Spheres Master NULL".

Then, go back to the [Objects] panel and [Clone Object] "Small Sphere NULL" 2 times. Close the Objects panel, and [Parent] "SmallSphere.lwo (1)" to "Small Sphere NULL (1)", "SmallSphere.lwo (2)" to "Small Sphere NULL (2)", and "SmallSphere.lwo (3)" to "Small Sphere NULL (3)".

Since the original "Small Sphere NULL" was parented to the "Spheres Master NULL" before we cloned it, all of the Small Sphere NULLs are already parented to the "Spheres Master NULL".

Whew! Now all of the spheres (and their parent nulls) can be positioned by manipulating the "Spheres Master Null".

Now for the lights. Select Edit [Lights] and [Parent] "Sphere Light (1)" to "SmallSphere.lwo (1)", "Sphere Light (2)" to "SmallSphere.lwo (2)", and "Sphere Light (3)" to "SmallSphere.lwo (3)". That's enough of that!

B. What I think will add a cool touch to this orb, would be to have the smaller spheres rotate perpetually. To do this, we'll start by moving the smaller spheres away from the 0,0,0 position. Then we'll use the nulls to rotate them individually.

Select Edit [Objects] and set the Selected

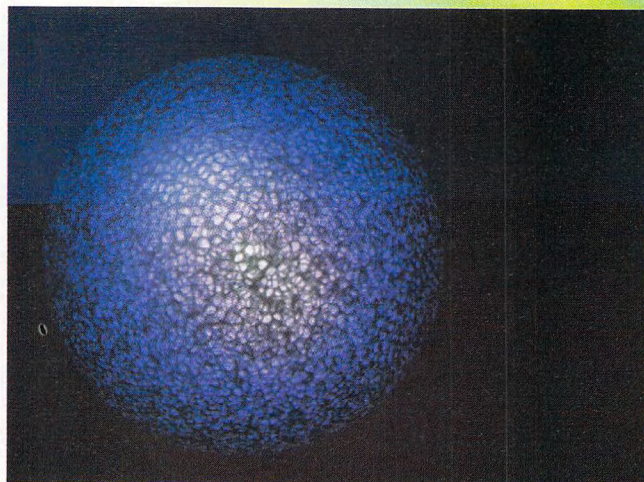


Figure 9

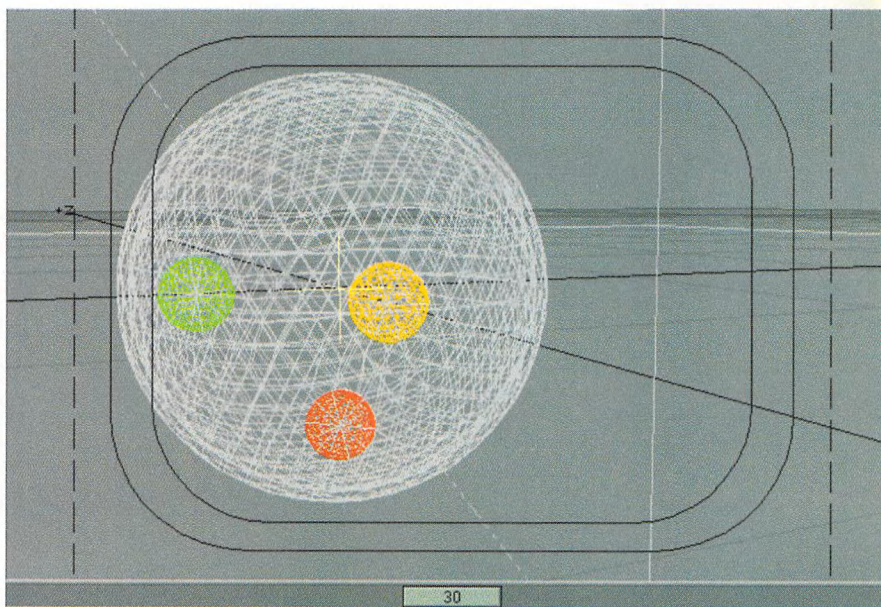


Figure 8

Item to "SmallSphere.lwo (1)". Select Mouse [Move] and press [n] to position it at X:40 cm, Y:0 m, Z:0 m. Press [Enter] twice to keyframe it at frame 0.

Using the same method, move "SmallSphere (2).lwo" to X:0 m, Y:40 cm, Z:0 m. Keyframe it. Then move "SmallSphere (3).lwo" to X:0 m, Y:0 m, Z:40 cm and keyframe it.

Press [f], type 60, and press [Enter] to go to frame 60.

Select Mouse [Rotate] and set "Small Sphere NULL (1)" to H:-720, P:0, B:0. Keyframe it at frame 60. Set "Small Sphere NULL (2)" to H:0, P:0, B:360. Keyframe it. "Small Sphere NULL (3)" to H:0, P:-360, B:0 and keyframe it as well.

Set the Selected Item to "Small Sphere NULL (1)", and press [m] to view its Motion Graph. We want the NULL to rotate forever, so set the End Behavior to [Repeat]. Also do this for "Small Sphere NULL (2)" and "Small Sphere NULL (3)".

Figure 9 shows the position of the spheres at frame 30. Note that I've colored the small spheres and resized the grid to 1 m for visibility's sake.

14. Let's see what we've got going on here. Click [Preview], and select [Make Preview]. Create a [Wireframe] preview for frames 1 to 60. When it's ready, click [Play]. The animation will loop, showing the rotations of the inner spheres. When you've seen enough, select [End Preview] and [Free Preview].

Before we start rendering the finished animation, we should go to the [Render] panel, and enable [Trace Shadows]. Keep in mind that by doing this, the rendering time will increase drastically.

If you think your system will take too long to render the full animation, try using a lower resolution, or rendering without shadows or antialiasing. At least it will give you an idea of what the scene should look like.

Were almost done! Let's just add a few

more finishing touches and get this beastly ready to render.

Set the Selected Item to "Sphere Master NULL". Press [Enter] once, type 50 for the frame number, and press [Enter] one more time to keyframe the object. This way, the object will not move until after frame 50.

Next, press [f] and go to frame 80. Make sure Mouse [Move] is selected, position the object at X:3 cm, Y:-4.5 cm, Z:0 m. Keyframe the object to it.

Go to frame 120 and position the object at X:-18 cm, Y:60 cm, Z:1.4 m. Keyframe this object at this frame.

Try doing another Wireframe preview, with Last Frame set at 120, to get a look at the orb's motion.

15. We're almost there. Open the [Camera] panel. Select a Basic Resolution and enable Antialiasing. I'll be using "Medium Resolution (640x480)" and [Enhanced Low] antialiasing.

Then, go to the [Render] panel, and turn off Render Display. Click on either [Save Animation] or [Save RGB Images] and select a format and location to save the file(s).

Now we're ready to [Render]. Set Render First Frame to 1, Render Last Frame to 120, Render Frame Step to 1, and set Frame Advance to [Automatic]. Click [Begin Rendering] and grab yourself a coffee - or depending on your system's speed, get a good night's rest.

Keep in mind that the NULLs for the small spheres are used to control their rotation values. To move or rotate all the spheres as a group, use the "Spheres Master NULL". If you just want to rotate the large sphere, rotate it directly.

I hope this tutorial proves to be useful or, at the very least, entertaining. 

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mechanism, you will have a guide. A few general things about the script merit note, however.

The script will use the scaling value of each segment of the tornado's spine to determine a distance from the spine (note the varying scales of the Null objects in Figure 3 as they ascend above "TornadoBase"). The script will also calculate a jitter value for the radius assigned to each particle, and will vary the rotation speed of each particle based upon its distance from the center. Particles closer to the spine will spin faster than those further away. In addition, the scaling factors between segments are interpolated by the script. This provides a smooth transition of particles between individual segments of the spine.

The script will attempt to take into account the vertical shift between segments, and interpolate the X/Z offsets of the particles appropriately (this is most apparent in Figure 4b). A more correct approach would be to rotate the orbit of each particle based upon an interpolated normal between each segment. However, to accomplish that would require a great deal more code (not to mention execution time). If you only offset the vertical differences between segments by small amounts, the X/Y plane shift method should suffice.

Finally, particles are allocated to segments based upon their scaling values. The larger the scaling value, the more points are allocated to a segment. This prevents segments of the tornado that push outward from becoming too thin.

Chiropractic Creation

To help in constructing a tornado spine, I've included a Generic LScript that will construct (and subsequently load) a scene file that contains a tornado spine constructed from Null objects. These Nulls are correctly parented and labeled. It uses parameters you can modify to build the spine, and the SceneMan Object Agent to build the scene. As always, these files are available in the Downloads section of this issue's online bonus area. 

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Tutorial

REQUIRES:

LightWave 4.0+

A STEP-BY-STEP GUIDE TO CREATING MORE PROFESSIONAL PRODUCTIONS

APPLYING REAL WORLD CAMERA PHYSICS

BY
CHRISTOPHER
DE SANTIS

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Understanding Lens Focal Length and Depth of Field

One of the first things a LightWave artist must understand is that the moment you enter Layout you become a digital filmmaker. You are stepping onto a digital set and sitting down in the director's chair. In many cases, it's how you handle your camera that will make or break a good animation.

I repeatedly meet artists who are so captivated by modeling or animation techniques that they don't recognize the importance of good camera skills. What is not realized is that a good understanding of real world camera physics, and a strong grasp on composition, can quickly transform a good anima-

Figure 1

tion into a spectacular one. The fundamental rule to understand is that even though you are working in a CG environment, you have to treat your camera as if it were real. So let's get you up to speed as we venture into the realm of digital cinematography.

Lens Focal Length

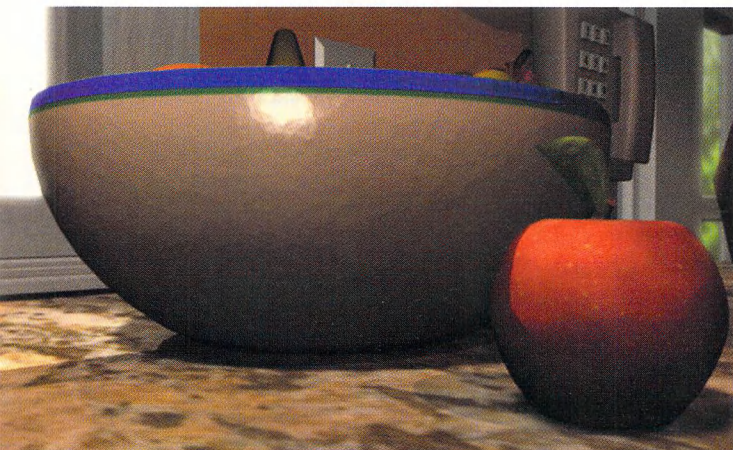
One of the most overlooked and basic elements on LightWave's Camera panel is the Lens Focal Length setting. The default value is 24.0 mm; but that information can't help you if you're not familiar with what focal length is or how to use it.

In the real world, focal length refers to the distance from the camera's lens to the camera's focal plane - where the camera's view is exposed on to the negative to create a picture. This distance

will primarily effect two major elements: focus (how sharp or blurry the image is) and perspective (is this a wide angle shot or close up). In LightWave, the Lens Focal Length will only affect the perspective. Focus is handled by other settings which we'll look at shortly. Let's try something simple to see what Lens Focal Length can do.

1. First thing we need to do is set up a scene that will act as the focus of our test. Just about any scene will work for this first part. A sample scene has been included in the Downloads section of this issue's bonus area. It's a very basic scene with three apples ("food/apple.lwo") sitting on the ground ("landscape/ground.lwo"). I will be using a couple scenes from my recent CG short, *Apples and Oranges* to illustrate this tutorial.

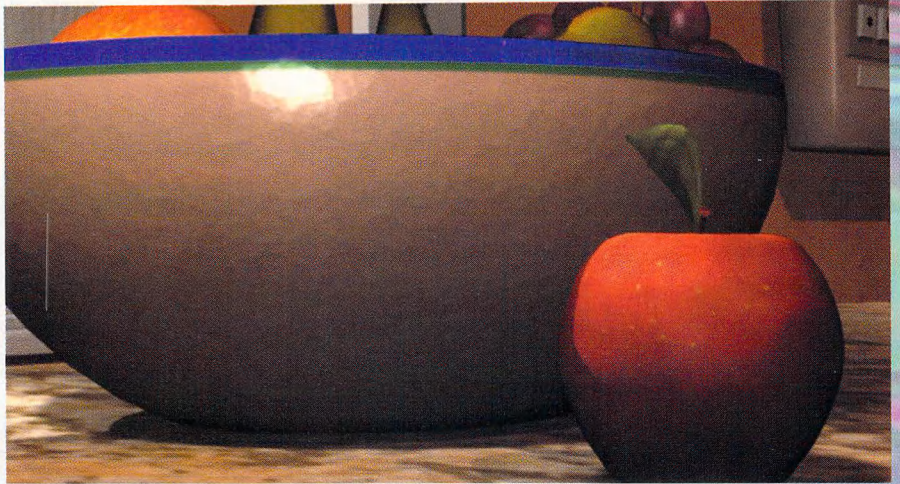
2. Open up the [Camera] panel. In the center of the panel is a pop-up menu that, by default, displays Zoom Factor. Click on it to select [Lens Focal Length]. It should be set to the default of 24



mm. Close the Camera panel, and press [F9] to render this view (Figure 1).

3. Now go back to the [Camera] panel and set the Lens Focal Length to 45mm. Now, render this view.

The image is obviously closer now, showing a smaller field of view (Figure 2). It's important to note that the smaller the length of your lens, the wider the perspective. Inversely, the longer



LightWave 4.x, 5.0 Notes

In Step 2:

- **Lens Focal Length is not an adjustable parameter. Instead, it is a displayed value, Equivalent Lens, calculated using the Zoom Factor and [Film Size] settings. The default of 24 mm is obtained using a Zoom Factor of 3.2 with [Film Size] set to "35 mm motion picture".**

In Step 3:

- **To get a Lens Focal Length of 45 mm, set Zoom Factor to 6.0.**

the lens the tighter the width and the flatter the image will appear.

Lens choice depends greatly on the look or style you as a filmmaker are shooting for. Choosing the right lens for the job is only a matter of using a little common sense. Typically you will want to use a 60 mm lens or

higher for traditional action shots. These are the lenses used by real cinematographers to get more depth in their shots. If you are trying to reproduce a still image then you may want to use a common lens of around 50 mm. If you want an awkward or highly stylized look then try for a fisheye of around 17.5 mm. See Figure 3 for a handy reference chart of typical lenses.

We have selected a 45 mm lens because it is the closest approximation to how the human eye sees things. That is, LightWave is showing you what your scene would look like if you were really standing there looking at it. It isn't the most glamorous lens in the bunch, but it is the most familiar to your brain, and one that your eye will recognize as undistorted.

Depth of Field

The next element to investigate in our pursuit of replicating real world camera physics is often the most important, and most overlooked, Depth of Field. Understanding and recreating accurate Depth of Field will almost always turn a good looking shot into a great one, because the human eye has come to

understand this concept to be a visual truth. Commonly, Depth of Field refers to the area of your image that is in focus. We are going to look at how to work with these settings accurately, to make the most of the lenses you choose.

The first thing you need to understand is that, for the most part, each lens will have a focal length defined by it's closest focusing distance (Figure 3). Just like in the real world.

Everything you will need to manipulate LightWave's built in Depth of Field can be found on the [Camera] panel. But, before we can start playing with the Depth of Field settings we need to do a little prep work.

If you're not using the provided scene, arrange some objects similar to Figure 4.

4. Go to the [Camera] panel and set Antialiasing to [Medium]. Antialias refers to the subtle blending of pixels around objects that is done during rendering. If Antialiasing is Off then the boundaries around objects will appear to have very hard lines dividing them. The higher you set the Antialiasing setting,



Lens Type	Focal Length	Closest Focal Distance	F-Stop
Standard (Human Eye)	45 - 50 mm	1.75 - 2 feet	8
Wide Angle	24 - 35 mm	1 - 1.25 feet	11
Super Wide Angle	14 - 20 mm	0.9 feet	16
Telephoto	80 - 300 mm	3 - 10 feet	5.6
Super Telephoto	400 - 800 mm	15 - 45 feet	4
Fisheye	7.5 - 15 mm	0.7 feet	22

Figure 3

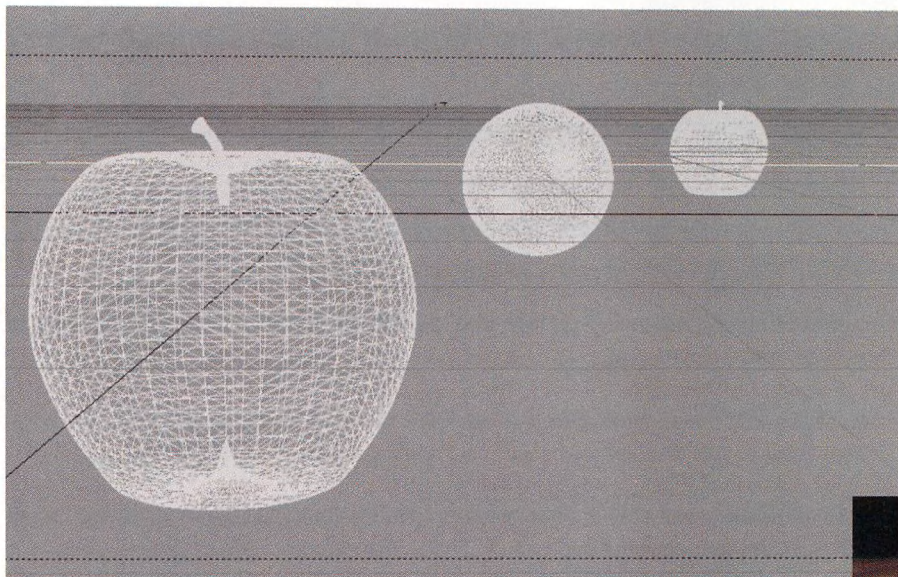


Figure 4

the smoother your image will appear (but the longer rendering will take). Normally, it's a good idea to set your Antialiasing to Enhanced Low, if you are looking for a nice clean render. The reason we are using Medium level is because LightWave's Depth of Field requires it as minimum.

5. Enable [Depth of Field] to get access to the Focal Distance and F-Stop settings. It is these two parameters that are the meat and potatoes of LightWave's Depth of Field. They are also the most difficult to understand.

6. Let's start with Focal Distance. This parameter defines the distance between the camera and a point in the scene which will be focused on. Any object(s) at that distance from the camera will be in sharp focus.

You can estimate this distance, by selecting View [Top] and looking at the reference grid. The Grid Size is shown in the Status window. Alternatively, you can select Edit [Camera] and note the camera position. Then select Edit [Objects] and set the Selected Item to the object you want to focus on and note its position. Then do the math.

First, we are interested in the object that is closest to the camera. For our apple scene, the camera is at X:0, Y:2, Z:-15, and "apple.lwo (1)" is at X:-1.2, Y:0, Z:-6.5. That gives us a distance from the camera to the center of our cow

of about 8.81 m.

Set Focal Distance to 8.81 m, or whatever value you calculated for your scene.

7. In LightWave, the Lens F-Stop setting controls how blurry the out of focus areas will appear. On a traditional Single Lens Reflex (SLR) camera, the standard F-Stops are 1.7, 2.8, 4, 5.6, 8, 11, 16, 22. You should use these values normally. The reference chart in Figure 3 shows reasonable values for each lens. For this example, set Lens F-Stop to 8.

8. Press [F9] and see what you get. The foreground object should be in crisp focus and the background objects should be out of focus (Figure 5).

Now set the Focal Distance for the middle object (15.13 m) and render. The closest and farthest objects should be blurry and the middle object should be in focus. Also, try focusing on the farthest object (Focal Distance = 22.18 m) in the shot (Figure 6).

Focus Pull Effect

9. Now, we'll try an animated effect called a Focus Pull, to gradually shift the focus from one object to another.

Click on the [E] next to Focal Distance to edit its Envelope. [Create] a key at frame 0 with the Current Value setting for your distant object (22.18 m). [Create] another key at frame 24 and set its Current Value to that of your closest object (8.81 m).

Now [Render] out the sequence from frame 1 to 24, and watch as the focus of your shot moves from the background object to the foreground object. This technique is often used in movies to create tension or to shift the audience's focus from one action to another.

Figure 5

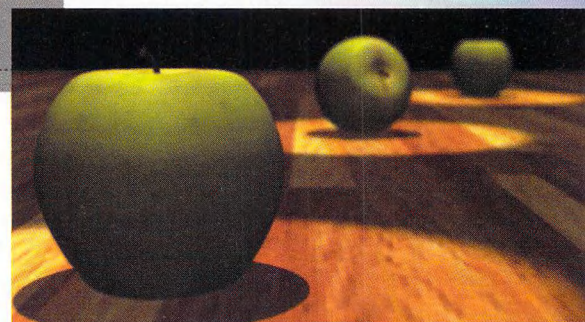
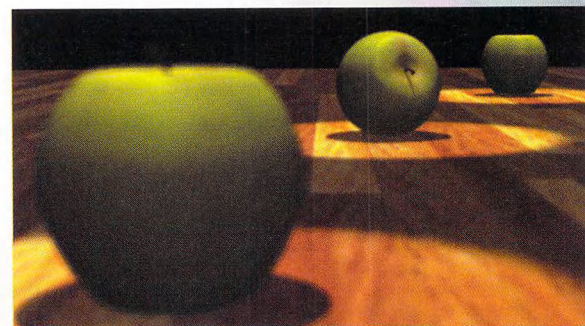


Figure 6



There's a lot more that you can do with these settings. Be creative and, now that you know some of the basic rules of lenses, don't be afraid to break them and come up with a look that's all your own. Try using these techniques to reproduce some of your favorite movie shots. The tools are all at your finger tips, just remember to stay focused. **NT**

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Tutorial

A STEP-BY-STEP GUIDE TO CREATING MORE PROFESSIONAL PRODUCTIONS

This article has additional
Online Content
www.newtechniques.com/bonus

by
Michael Ash

Making Custom Transitions With Aura

Custom transitions can be achieved easily, by taking advantage of the fact that Aura has multiple layer capability. Imagine several sheets of glass laying on top of each other. You can paint on one layer and still be able to see parts of other layers below.

Have you ever needed a video transition that's a little different? But, you've looked at all of your switchers and other video toys and nothing seems to fit the job. Are you looking for something a little more eye catching or original than the basic transitions you see being used just about everywhere? What if you wanted to add in some 3D elements? Well, with Aura it's not very difficult, and it can be done in just a few minutes.

How does this help in making a custom transition? Well, imagine that you have two layers of video stacked on top of each other. If you erase a portion of the top video layer, the second video layer will be revealed in that erased area. By erasing an area pro-

gressively between the two or more sequences. This works regardless of whether the layers contain stills or sequences of frames.

Although this tutorial makes mention of using the Video Toaster to capture video, and LightWave to render transition graphics, the

got some images to work with, you can still follow along. We've included some of the elements in the Downloads section of this issue's online bonus area.

Pre-flight Checklist

In this tutorial we are going to build a transition for a fictional show about the U.S. Airforce Thunderbirds. We'll transition from one video sequence to another; but, to make it a little more exciting, we'll have an F-16 leading the transition with a title following behind.

When you set out to make a transition, or any kind of animation, you should pre-plan as much of the design as you can. This will help you figure out what elements you need and how to put all the elements together. Here's the parts of the project that we'll need to find or create:

gressively process works the same with any over time you sequences of images. So if you can transition only have Aura, as long as you've



Tutorial



Figure 1: F-16 3D model

1. Two video sequences

If you have a Video Toaster, this is an easy task. Otherwise, you'll need to source something of interest. If you don't have anything immediately available you could just create two sequences of differently colored backgrounds, or some wacky patterns.

2. An F-16 flying across the screen

You can either scan an image of an F-16 or use a 3D model. I had a 3D model of an F-16 already built so I used that (Figure 1).

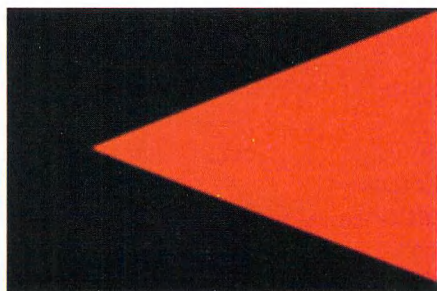


Figure 2: Wipe mask

3. A transition mask

We'll create a triangle shaped wipe (Figure 2) that will follow the F-16 across the screen.

4. Titles

The last element, the title, is easy to create in Aura.

Cleared To Take Off

1. I used a Video Toaster to capture the two video clips I wanted to transition between. In VTDirector, right click on the Taskbar icon and go to Record. Set the selected drive to your video drive and make sure your video feed is going in to the input you have selected. Then just click on [Record]. [Stop] when you have the section you want.

2. Next we want to create the F-16 animation. There's a few ways to do this. I loaded a model of an F-16 Thunderbird jet I had made in LightWave. The animation I did was very simple. I've prepared a scene file that uses a model included with LightWave if you wish to render that. I just had the F-16 fly from off

screen on the right, to off screen on the left, with a duration of 1 second (30 frames).

I also added a very simple light setup to the scene to create some shadowing by the jet. I used a Distant light at the top, and a Shadow Mapped Spot light on the bottom to fill in the shadows. The real trick here is how the images get rendered. First I set the Resolution to 720 x 486 (Toaster). Then I enabled Field Rendering (see Fields vs Frames), so that it will play back smoothly.

Another important consideration is how this animation will be loaded into Aura. Normally you would have to render the animation over a black background and key out, or remove the background. Fortunately, Aura will automatically use an alpha channel if it's available. So in this case, all we have to do is tell LightWave to save the frames as Targa32(.tga). When you load these frames into Aura, the alpha channel will be used, making the background transparent.

For what we're doing here, rendering the animation in LightWave is a bit overkill - and more time consuming than it needs to be. If we wanted more complex movements of the jet, LightWave would be the way to go; but this simple right-to-left fly-by could also be created much faster using Aura's Keyframer with a still of the jet. If you don't have LightWave, and just want to scan an image or use the one we've provided, this is the approach you'll want to take, too. The method is the same as we'll use to create our transition (Refer to Section 3 now if you need to).

FIELDS VS. FRAMES

A little lesson here on fields and frames. Film is composed of individual frames. When a sequence of frames is played back, you perceive motion because of something called "persistence of vision". Your eye still holds the image it just saw. If you follow it quickly with a new image you will see smooth motion.

Video playback works a little differently than

film, where a frame is just a frame. A video frame is made up of two alternating scan lines called fields. One field of the image is displayed on every odd scan line, and then the other is displayed on every even scan line. Although there is a delay between the drawing of the two, the eye perceives it as both being displayed at the same time, so you see it as smooth motion when the video is played back.

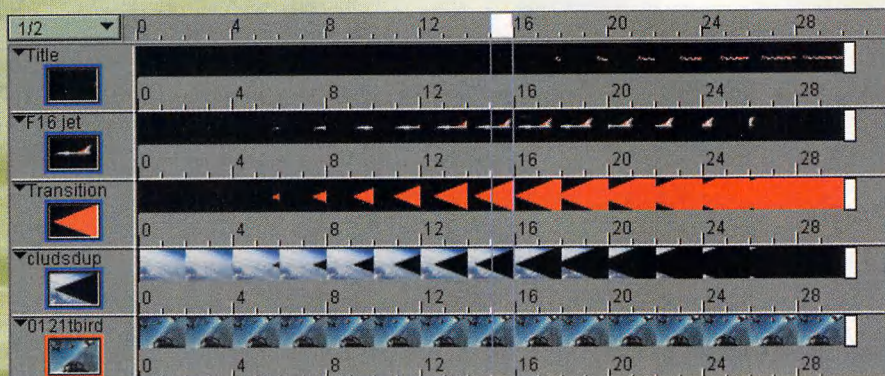


Figure 3: The assembled Aura project

We're ready to start our project in Aura now. The order of the video layers is important here - this is where the glass sheets analogy comes into play. Refer to Figure 3 to confirm the order; but don't worry that we haven't got all the shown layers yet. Let's load in what we have so far: the ending sequence ("0121tbird"), the starting sequence ("cludsdup"), and the F-16 animation ("F16jet").

If you're working with the LightWave generated images, it will look like they chopped it in half. This is normal because we rendered the animation as fields. Aura is simply displaying both fields at the same time.

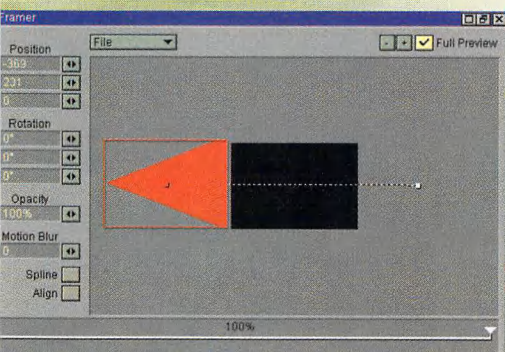


Figure 4: The keyframed transition

Now we'll make the transition mask. Create a new layer and use the Filled Polygon tool to make a triangle (Figure 2). It doesn't matter where you draw it since we're going to move it later. Now, pick up the triangle shape as a brush and then use [Clear selection] to clear the contents of the current layer.

Then drag out the current layer to the length of the video clips, and move it above the "cludsdup" layer (Figure 3). Turn this layer into an animation layer [Make anim], and [Select all] the frames.

Now that we've got our triangle ready, let's set it in motion using the Keyframer animation filter (Figure 4).

On the first keyframe, position the brush off the right side of the screen. Use the Zoom Out gadget so you can see where the brush is. Set the second keyframe off the left side. [Select all] the frames and make sure you have Drawing Mode set to Color. Click [Apply to Layer].

This will create a series of frames of our brush moving from right to left. Step through the frames one at a time. You may have to fill in a few blank spots. Wherever the color is, is where your transitioning video will appear.

If you want a soft edge on the transition, [Select all] the frames again and apply the Smooth filter. Finally, move this layer above the first video sequence ("cludsdup").

Now set the Drawing Mode to Erase and drag the "Transition" layer onto the first sequence ("cludsdup"). Wherever there is color on the "Transition" layer it will erase that area on "cludsdup". When it's done, set the Opacity

of the "Transition" layer to 0%.

Now if you Make a Preview you should see your transition with the F-16 animation on top.

For that little something extra, let's add a drop shadow to the F-16 (Figure 5). Go to the "F-16jet" layer and [Select all] frames. Now use the Shadow filter with Distance: 29, Power: 50% and Smooth: 5.

4. The creation of the trailing title is very simple. Just configure the Text tool as you like and click [Create brush]. Then create a new "Title" layer and keyframe it as you did with "Transition". Remember to select the Custom Brush tool before using the Keyframer to move the brush.

To make the title more interesting, you might want to apply a Shadow to it. And/Or

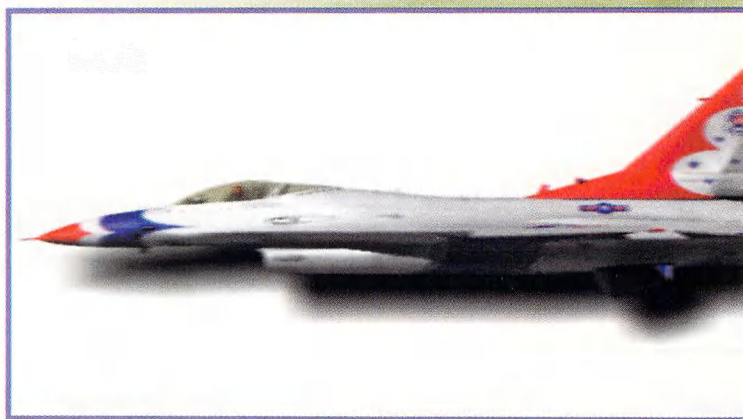


Figure 5: F-16 3D model with shadow

use the Tornado filter, with manual adjustment to set the effect just in front of where the title enters the screen. This will twist the title around as it follows the jet.

Further Exploration

Another idea to try is using the Stroke Recorder with a brush to make the transition. Remember to use a large brush, or it will take a long time to complete the transition. You can also use the drawing tools and the Stroke Recorder to make hand drawn transitions.

Michael Ash is a freelance writer/ animator, currently working on NewTek's Aura 2 manual. You can email him at mash@mho.net

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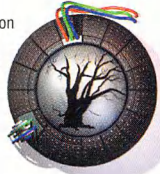


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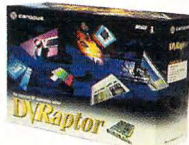
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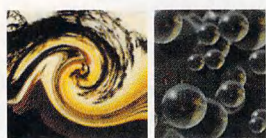
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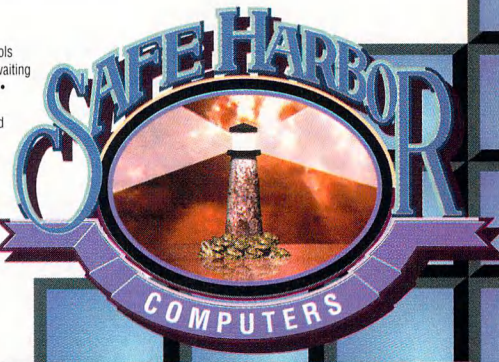
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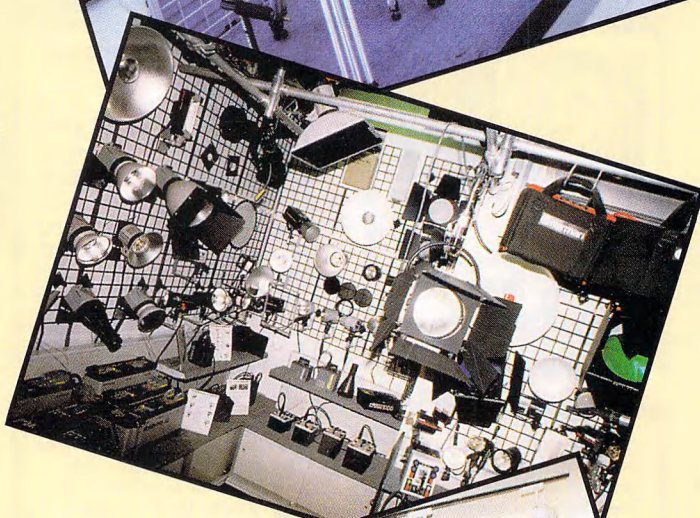


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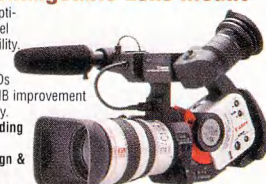
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- Adjustable gamma for adjusting the "feel" of the picture according to taste. Adjustable detail frequency for setting picture sharpness for a bolder or finer look.
- Viewfinder status display uses characters and menus to display selected information, including audio indicator, tape and battery remaining time, VCR operation and warning indicators. Camera settings and setup parameters can also be checked at a glance. A built-in menu dial lets you quickly navigate through the viewfinder menu.
- Highlight Chroma Processing maintains color saturation in highlights. The result is natural color reproduction, even in bright highlight portions of the picture.
- Smooth Transition mode ensures a smooth transition with no jump in color or light level taking place when manually changing gain or white balance settings.

Professional Audio

- To complement its superior video performance, the GY-DV500 offers outstanding digital PCM sound. You can

- choose between two 16-bit 48-kHz channels or two 12-bit 32-kHz channels with a dynamic range of 85 dB.
- In addition to camera mounted mic, has two XLR-balanced audio inputs with 48v phantom power and manual audio control. Phantom power can be switched off when not in use.
- Side-mounted speaker lets you monitor audio in playback and recording modes without headphones. The speaker also delivers audible warnings.

Compact and Lightweight

- Measuring 10-7/8 x 9-11/16 x 5-1/8 the GY-DV500 amazingly enough is almost half the size of the GY-X2B. Weight is carefully balanced for ease of use in an ENG environment and extended shooting.
- Consumes less than 20 watts of power, eliminating the need for cumbersome and heavy, large-capacity battery packs.

Automatic Functions

- Full Auto Shooting (FAS) mode for point-and-shoot ease of operation. You simply zoom and focus. Activating the Full Auto Shooting sets the camera to the Auto Iris mode, even if the lens is set to manual. Automatic videolevel control (ALC) is also activated, along with Extended Electronic Iris (EEI) and Full Auto White, which provide both variable gain and variable shutter. Shoot continuously from a dark area to a bright area without changing Gain, Iris or ND filter.
- ALC (Automatic Level Control) with EEI (Extended Electronic Iris) for continuous shooting in all light levels — no need to switch gain settings or ND filter.
- Continuous Auto Black (CAB) circuit assures perfect Black Balance in a changing environment without having to interrupt shooting.
- AccuFocus activates the electronic shutter for approximately ten seconds, forcing open the iris. As a result, the depth of focus is minimized, and the lens can be focused quickly and precisely.

Conveniences

- Time code and index IDs allow frame accurate non-linear editing and mastering on standard formats with quick easy access to any target point.
- LCD display system lets you switch or set functions, while referring to the counter or the on-screen display. Mode selection and initialization are also available via the menu display. Back-lit display supports shooting in dark areas.
- Back tally lamp lights to let you know that the camera is entering the Record mode. It flashes during the transition to the Record mode and when an error is detected in the camera.
- Variable Scan function allows flicker-free shooting of computer monitors. Shutter speeds can be set from 1/60.5 to 1/196.7 of a second in 255 increments to precisely match the scan rate of the monitor.
- Tape/Tally Remaining indicator means you always know exactly how much tape and battery power remains.





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SONY

DSR-PD100 3-CCD Mini DV CAM Camcorder

The smallest DV CAM camcorder, the DSR-PD100 is also the first one with built-in image capture capability. The highly compact camcorder features three 1/4" 380,000 pixel CCDs that allow two scanning modes: 480 progressive (for stills) or interlaced (for video).

- Three 380,000 pixel CCDs complement DV CAM with a high standard of quality for this class of camera. DV CAM offers superior video and audio quality, and reliability for professional use.
- The CCD's can be switched to scan in two ways: Interlace Scan for recording moving images and Progressive Scan for recording still images.
- Super SteadyShot compensates for unwanted camera movement without reducing image quality.
- A built-in 12X zoom lens is supplemented by a 48X digital zoom that can provide really close up shots.
- Manual control of focus, gain, white balance and shutter speed.
- Also has full automatic control.
- i.LINK interface provides a single cable connection to transfer digital video and audio.
- Records PCM digital stereo sound in both 48 kHz mode (16-bit) and 32 kHz mode (12-bit). When a recording has been made in 12-bit mode, another stereo channel can be added later.
- The DSR-PD100 has a 3.5" color LCD monitor with 184,000 pixels, opening 90° to the side and swiveling 180°. Also has a 180,000 pixel color viewfinder.

- Can record still images on both tape or removable media, such as Memory Stick.
- Start/Stop/Zoom of the camcorder and VTR operation, plus slow playback or search can be controlled by the supplied wireless remote commander.
- Supplied XLR adaptor attaches onto the hot shoe of the camcorder, allowing external professional microphones to be connected to provide high quality audio sources. Through XLR adaptor, DC power (+48V for a microphone) is also supplied from the DSR-PD100.
- A 0.7X wide conversion lens is supplied, complete with lens hood, lens cap and protective bag.
- Includes 4 MB Memory Stick & Memory Stick/PC Card Adaptor.
- Weighs just 1kg (2.2 lbs) with a battery and a tape. A magnesium alloy die cast body keeps it light but robust.



DSR-200A 3-CCD Digital (DV CAM) Camcorder

Combining a compact and lightweight body with the superior picture quality of DSP (Digital Signal Processing) and the DV CAM format, the DSR-200A is the ideal acquisition tool for video journalists, event and wedding videographers, stringers and production houses. 500 lines of horizontal resolution, 48kHz or 32kHz digital audio, three hour recording time, and minimum illumination of 3 lux is only the beginning. Other features include 16:9/4:3 capability, Steady Shot, high resolution 1-inch viewfinder, time code operation, time/date superimposition and an IEEE-1394 interface for direct digital output. Offers full automatic as well as manual control of focus, iris, gain, white balance and shutter speed.

- Variable servo 10X optical power zoom lens goes from 5.9 to 59mm in 1.7 to 24 seconds. The manual zoom rocker is continuously variable right up to where the digital 20X zoom kicks in.
- Sony's Super Steady Shot reduces high frequency camera shake without compromising image quality. SteadyShot uses horizontal and vertical motion sensors that allow it to work accurately while zooming, moving (even shooting from a car), and shooting in low light conditions.
- Has digital effects including audio and video fade, overlap and Slow Shutter.
- Automatic and manual focus, iris, shutter, gain and white balance. Iris is adjustable in 12 levels from F1.6 to F11, shutter from 1/4 to 1/10,000 of a second in 12 steps, Gain from -3dB to +18dB in 8 steps.
- Zebra Pattern indicator, built-in ND filter.
- Custom Preset function lets you preset, store and recall custom settings for color intensity, white balance (bluish or reddish), sharpness and brightness.



- Stores Photo, Date/Time, Shutter Speed, Iris, Gain and F-stop for easy recall. So if you have to re-shoot, you know your original settings for every scene and frame.
- Records Drop/Non-Drop Frame time code. Time code can be read either as RC time code or as SMPTE time code.
- Has a large 1-inch B&W viewfinder with 550 lines of resolution for easy focusing even in low contrast lighting situations. Separate information sub panel displays time code, battery time, tape remaining and other camcorder functions without cluttering up the viewfinder.
- Records 16-bit/48kHz audio on one stereo track or 12-bit/32kHz with two pairs of stereo tracks (L1/R1, L2/R2), so you can add stereo music or narration.
- One-point stereo electric condenser mic for clear stereo separation. Directivity can be selected from 0°, 90° & 120°.
- Automatic & manual 120° audio level record controls. Monitor audio with headphones or from the LCD panel which has an active YU meter.
- XLR input connectors for mics and audio equipment.

DSR-20/40 DVCAM Player/Recorders

The DSR-20 and DSR-40 are versatile DVCAM VCRs with compact chassis and a variety of convenient functions for recording, playback and simple editing. They feature Auto Repeat Playback, Power-On Recording/Playback, multiple machine control interfaces and i.LINK (IEEE1394) input and output. And, of course, they offer the stunning image and sound quality inherent to the DVCAM format.

- They both offer i.LINK (IEEE1394) input and output. In addition, in the "Digital dubbing using TC Copy" mode, full information of video, audio and time code of the original tape can be copied to another tape. Especially useful when making working copies of the original.

Inputs and Outputs

- They provide a full range of analog video inputs and outputs for integration into current analog-based systems. They both offer composite and S-Video input/output, while the DSR-40 (only) offers a component output as well. The DSR-20 is equipped with analog audio inputs and outputs (RCA), the DSR-40 with RCA inputs and XLR-balanced output. These connections in combination with their i.LINK interface allow a smooth transition to an all digital system in the future.

Record/Playback Functions

- Automatic repeat function for repeated playback. After reaching either the end of the tape, the first blank portion or the first index

point, the DSR-20/40 automatically rewinds the tape, then starts playing back the segment again.

- They are capable of searching for Index Points, which are recorded on the tape as "in-point" marks every time a recording starts. They can also search for photo data recorded on a DVCAM cassette by the DSR-200A/300PD-100, or where the recording date has been changed.

Reference Input

- External sync input enables synchronized playback with other VCRs. Especially important in A/B Roll configurations. In addition, the DSR-40 only allows adjustment of H-sync and SC phase via the menu.

Control S Interface

- The DSR-20/DSR-40 have a Control S input allowing control via the optional DSRM-20 Remote Control.
- The DSR-20 adds a Control S output connector allowing two or more (up to 50) DSR-20s to be daisy-chained and controlled from one DSRM-20.

DSR-20 Only

- The DSR-20 can be powered by AC or DC.
- Equipped with Control L interface, the DSR-20 can perform simple Time Code-based editing when connected to another DSR-20 or other similarly equipped VCRs/cameras.

DSR-40 Only

- Equipped with an RS-422A interface, the DSR-40 can perform as the editing player in A/B roll or cut editing system.
- It also has a simple recording function which can be controlled

DSR-30 DVCAM Digital VCR

The DSR-30 is an industrial grade DVCAM VCR that can be used for recording, playback and editing. DV standard 4:1:1 sampling digital component recording with a 5:1 compression ratio provides spectacular picture quality and multi-generation performance. It has a Control L interface for editing with other Control L based recorders such as the DSR-200A DVCAM Camcorder or another DSR-30. It also has a continuous auto repeat playback function making it ideal for kiosks and other point of information displays. Other features include high quality digital audio, IEEE-1394 Digital interface and external time recording. The DSR-30 can accept both Mini and Standard DVCAM cassettes for up to 184 minutes of recording time, and can playback consumer DV tapes as well.

- Records PCM digital audio at either 48kHz (16-bit 2 channel) or at 32kHz (12-bit 4 channel).
- Equipped with Control L, the DSR-30 is capable of SMPTE Time Code based accurate editing even without an edit controller. Built in editing functions include assemble and separate video and audio insert.
- By searching for either an Index point or Photo Data recorded by the DSR-200A camcorder, the DSR-30 drastically cuts the time usually required for editing. The DSR-30 can record up to 135 Index points on the Cassette Memory thanks to its 16K bits capability.
- Audio lock ensures audio is fully synchronized with the video for



- absolute precision when doing an insert edit.
- Built-in control has a jog/shuttle dial, VCR and edit function buttons. The jog/shuttle dial allows picture search at 1/5 to 15X normal speed and controls not only the DSR-30 but also a player hooked up through its LANC interface.
- DV In/Out (IEEE 1394) for digital dubbing of video, audio and data ID with no loss in quality.
- Analog audio and video input/outputs make it fully compatible with non-digital equipment. Playback compatibility with consumer DV tapes allows you to work with footage recorded on consumer-grade equipment. Tapes recorded in the DSR-30 are also compatible with Sony's high-end DVCAM VCRs.



SONY

UVW-1200/UVW-1400A

Betacam SP Player • Player/Recorder

The UVW-1200 and UVW-1400A are non-editing VCRs which deliver Betacam SP quality and offer features for a wide range of playback and recording applications. RGB and RS-232 interface make them especially ideal for large screen, high quality video presentation, scientific research and digital video environments.

- Ideally suited for work in computer environments, because RGB signals can be converted into component signals and vice versa with minimum picture degradation.
- 25-pin serial interface allows external computer control of all VCR functions based on time code information. Baud rate can be selected from between 1200 to 38,400 bps.
- Built-in Time Base Stabilizer (TBS) locks sync and subcarrier to an external reference signal as well as providing stable pictures. High quality digital dropout compensator further ensures consistent picture performance.
- Equipped with two longitudinal audio channels.
- Both read LTC Time Code and UB (User Bits). The UVW-1400A also generates LTC and UB (Free-Run/Rec-Run).
- Auto repeat of entire or a specific portion of the tape.



- Built-in character generator can display VTR status, time code, self-diagnostic messages, set-up menu, etc.
- Control of jog, shuttle, playback, record, pause, FF and REW with the optional SVRM-100A Remote Control Unit.
- Composite and S-Video as well as component via BNCs which are switchable to RGB output. The UVW-1400A has two switchable sync connectors and a Sync on Green.
- Built-in diagnostic function and hour meter.
- Initial set-up menu for presetting operational parameters. Settings are retained even after power is turned off.

UVW-1600/UVW-1800

Betacam SP Editing Player • Betacam SP Editing Recorder

The UVW-1600 and UVW-1800 are the other half of the UVW series. They offer the superiority of Betacam SP with sophisticated editing features. They feature an RS-422 9-pin interface, built-in TBCs and Time Code operation. Inputs/outputs include component, composite and S-Video. All the features of the UVW-1200/1400A PLUS—

- Optional BVR-50 allows remote TBC adjustment.
- RS-422 interface for editing system expansion.
- Two types of component output; via three BNC connectors or a Betacam 12-pin dub connector.

- Frame accurate editing is assured, thanks to sophisticated servo control and built-in time code operation. In the insert mode of the UVW-1800, video, audio Ch-1/2 and time code can be inserted independently or in any combination.

PVM-14M2U/14M4U and 20M2U/20M4U

13-inch and 19-inch Production Monitors

Sony's best production monitors ever, the PVM-M Series provide stunning picture quality, ease of use and a range of optional functions. They are identical except that the "M4" models incorporate Sony's state-of-the-art HR Trinitron CRT display technology and have SMPTE C phosphors instead of P22.

- HR Trinitron CRT enables the PVM-14M4U and 20M4U to display an incredible 800 lines of horizontal resolution. The PVM-14M2U and 20M2U offer 600 lines of resolution. M4 models also use SMPTE C phosphors for the most critical evaluation of any color subject.
- Dark tint for a higher contrast ratio (black to white) and crisper, sharper looking edges.
- Each has two composite, S-Video and component input (R-Y-B-Y, analog RGB). For more accurate color reproduction, the component level can be adjusted according to the input system. Optional BKM-101C (video) and BKM-102 (audio) for SMPTE 259M serial digital input.
- Beam Current Feedback Circuit

- 4:3/16:9 switchable aspect ratio.
- True multi-system monitors they handle four color system signals: NTSC, NTSC 4.43, PAL, and SECAM.
- External sync input and output can be set so that it will automatically switch according to the input selected.
- Switchable color temp: 6500K (broadcast), 9300K (pleasing picture). User preset (3200K to 10000K).
- Blue gun, underscan and H/V delay capability
- On-screen menus for monitor adjustment/operation.
- Parallel remote control and Tally via 20-pin connector.



PINNACLE SYSTEMS

miroVIDEO DC-30 PRO

PCI Capture Card for Windows 95/NT

Pinnacle Systems' miroVIDEO DC30 Pro is the ideal solution for creating professional quality video productions. If you create corporate, commercial, wedding, event, multimedia or Internet videos, the high-powered software bundle and state-of-the-art hardware of the miroVIDEO DC30 Pro gives you unbeatable results. Includes Pinnacle Systems' powerful TitleDeck character generator plug-in for Adobe Premiere 5.1. Add creative, custom titles to your video productions with Emmy Award-winning technology. Use the full version of Adobe Premiere 5.1 to capture, edit and output professional quality productions for video, multimedia, and the web with. Also includes 300 unique Pinnacle Software Video SpiceRack transitions and a high quality video and audio breakout box. The breakout box allows for convenient placement of connections on your desktop.

- 2.4:1 compression ratio for a better final video image quality. Compression ratios under 4:1 are considered to be "broadcast quality."
- Full NTSC, PAL, SECAM, for worldwide compatibility.

Bundled Software:

- Full version of Adobe's Premiere 5.1 editing software gives you powerful editing tools to create professional productions
- Bring Hollywood-quality graphics to your video productions with TitleDeck. Easily add amazing titles to all of your video productions. Titles can fade up, scroll and even blend with pictures. Apply glows, neon and metallic looks, textures, shadows and shapes to your titles with any TrueType font.
- Pinnacle Systems' Spice Rack gives you over 300 transitions to choose from.
- Sonic Foundry's Acid Music software lets you create royalty-free music for your productions.
- Miro-INSTANT Video saves time and disk space with accelerated, intelligent rendering. When rendering and playing your final production, miroINSTANT Video overcomes the 2GB AVI file size limitation, allowing you to quickly put more video directly onto tape—in one pass.

DC-30 PRO \$649.00

NEW! DC-50 \$1599.00

miroVIDEO DC-30 PRO Turnkey System:

- 220-watt midtower case • Pentium 233 MHz MMX processor • PCI motherboard with 512K cache
- ATI Xpert-128 MB PCI display card • 128MB of RAM • Quantum 3.2 GB IDE system drive • Seagate (Barracuda) 9GB SCSI-2 FAST/Ultra-wide hard drive • Initio 91004W Fast/Video SCSI 2 controller • 3.5" floppy drive • Teac CD-532E 12X IDE internal CD-ROM drive • Altec-Lansing ACS-43 2-piece speaker system • Focus 2001A keyboard • Microsoft MS mouse • Viewsonic GS771 17" 1280 X 1024 SVGA monitor • Windows 95 • miroVIDEO DC-30 PRO video/audio capture card • Adobe Premiere 5.1 (full version) editing software, TitleDeck, Pinnacle Software Spice Rack, Sonic Foundry Acid Music..... \$2495.00



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NewTek LightWave [6]

3D Animation, Modeling and Rendering Software

Explosive ideas that test the boundaries of 3D animation deserve a program that can realize them in exciting new ways. Creating worlds that no one's ever seen. Creatures that have never walked the Earth. Special effects, games, web sites - all creations that exist only in your mind. Until now.

The culmination of over ten years of development, LightWave [6] advances the state-of-the-art in professional 3D animation by adding a comprehensive set of groundbreaking character animation tools, advanced rendering capabilities, a new and improved architecture and a refined work environment. The three traditional areas of 3D, modeling, animating and rendering, have received massive enhancements in the new software. Among the thousands of changes in this completely redesigned system, LightWave [6] boasts real-time subdivision surfaces as a modeling and animation tool, radiosity, caustics, 160-bit floating-point rendering, a hybrid Inverse/Forward Kinematics engine and new character-animation technologies: LightWave, the recognized leader in the film and television industry, provides the most complete feature set of any 3D animation tool available—one of the reasons you can find LightWave 3D in more Hollywood animation suites than any other 3D program. And, LightWave [6] is the only 3D software system to run on Macintosh, Windows NT, Alpha and SGI.



A U R A

Powerful Production tool for Animation, Paint and Video Layering

Aura is a one-of-a-kind palette of paint tools, compositing, cel animation, special effects, video elements, 2D animation and character generation. Aura blends key features of all of these tools into one superb system. So you can take any digital image... no matter what the source... and add motion, color, 2D and 3D elements, effects and titles. Throw in rotoscoping, video painting and layering and you can add color and depth to any production. Aura also works seamlessly with LightWave to give you a complete production environment.

- Animation, Video and Layering:**
 - Time-line based animation and video element assembly
 - Unlimited layers for stills, animation or video
 - Use any frame rate or size for animation, video or web
 - Fully animated, full-color brushes
 - Keyframe animation and video, motion blur and opacity
 - Move any element in x, y or z, heading, pitch or bank space
 - Stroke recorder to animate and reproduce brush strokes over time with support for pressure, size and noise parameters
 - Complex composite and layered animation
 - Real-time overlay and alpha channels for every graphic layer
 - Interactive layer rearrangement
 - Photoshop layer support and image animation

- Drawing, Pen/Brush Control:**
 - Freehand and polygon shape creations
 - Line, spline curve, shape draw with circle, ellipse and rectangle
 - Filled or outline drawing
 - Excellent control of pen, pencil, colored pencil, chalk, crayon, airbrush, watercolor, gouache and oil painting
 - Control pen/brush tip, tension, pressure, size, opacity
 - Rotoscoping for quick, powerful video painting; draw/paint operations "over time" and animated video brushes "over time"
 - Drawing tablet support for Wacom (or compatible) with 256 levels of pressure and speed
 - 2400 image processing/drawing combinations
 - Text tool supports TrueType fonts and a wide range of text parameters
 - Color, chroma, luminance and alpha channel keying

Video Toaster

Tools for Broadcasting and Beyond

With a suite of tools for video creation including all the essential components for video editing, compositing and 2D/3D animation, the Video Toaster is an uncompressed D1 (composite, component, Y/C) Windows NT solution that offers a price/performance equation unmatched in the industry. Unique to the Video Toaster is a breakthrough technology developed by NewTek that turns a standard Pentium II or III processor into a highly specialized video DSP (digital signal processor) for time base correction and other capabilities typically associated with expensive custom chips. Superior to systems that cost tens of thousands of dollars the Video Toaster includes LightWave VT 3D animation software, Aura paint and compositing software and in-synch Speed Razor 4.5 SE video editing software. Leveraging over 12 years of experience as an industry leader and pioneer in the desktop video, 3D, and 2D paint and animation markets, NewTek has created a product that contains award winning tools for creating better than broadcast quality television...at an unbeatable price!



Uncompressed Video—No Compromises

- The Video Toaster offers quality that's second to none. ALL video is ALWAYS stored in its native, uncompressed D1 video format. Unlike other boards that show compression artifacts, the Video Toaster maintains the original pristine quality no matter how many layers in your project.
- The Video Toaster allows you to manipulate uncompressed video in many ways, including traditional 2D compositing, rotoscoping, 3D animation and modeling and editing. By merging video into a 3D compositing and animation environment, editors will find a new paradigm for video effects and manipulation. The quality and capabilities of the Toaster are comparable or better than digital video editing costing \$50,000 to \$100,000.
- The Toaster provides an uncompressed D1 (composite, component, Y/C) digital video solution typically associated with extremely expensive systems. High-end facilities know that uncompressed digital video is essential to the editing process. Most compression-based systems are relegated to industrial and corporate video segments due to restrictions on the number of layers and quality degradation associated with multi-pass compression. All compressed systems produce unwanted artifacts. Because the Toaster utilizes uncompressed video, you can infinitely layer video without any concern about artifacts. This is the major separation between high-end and mid range systems. The Toaster brings that ultra high-end sophistication to users at levels at an unprecedented price point.

Powerful Editing

- The ability to capture, edit and output to uncompressed video and other formats, including ASF for video streaming on the Web and multimedia AVIs.
- Graphical workspace for digital media content management
- Real-time on-screen preview of edits
- Power character generator (CG).

Toaster Utilities

- VT Director**—Allows any program that supports cut and paste to display an image on a NTSC or PAL video monitor. Imagine working in Photoshop and being able to display your work on a video monitor with one keyboard shortcut.
- ToasterVision**—Allows you to preview both video input and output as well as animation on your RGB monitor at 720 x 480 resolution and full frame rate—60 fields per second.

Continuously Upgradeable—Guaranteed Against Obsolescence

The Video Toaster was designed to last for years to come. Similar to the original Video Toaster for Amiga, which is still in production 10 years after its introduction, the Video Toaster utilizes a hardware system that leverages highly tuned software and the systems processor. The true power of the system comes from the proprietary software designed to create magic without the use of expensive video cards or bulky external hardware. By merging software and hardware, the Video Toaster can be upgraded and expanded well beyond current systems. NewTek will be adding modules for a real time 16-input switcher, DV I/O, storyboard editing, and real-time chroma keying and 3D DVE.

VIDEONICS Effetto Pronto

Digital Video Effects and Compositing System for Macintosh

Effetto Pronto is a powerful combination of compositing and effects software, and a dedicated PCI hardware accelerator card. With a keyframe-based timeline compositing interface, Effetto Pronto blends all of the elements you want in your project: video, graphics, 3D animation and anti-aliased text from the CG module. It even includes an audio track so you can animate to the beat of the music.

- Work with an unlimited number of tracks at any resolution
- Effetto is resolution independent so you can mix and match a variety of formats and seamlessly bring them all together
- Color correction, chroma and luma keying, 3D warps with perspective and 3D animatable lights.
- Advanced character generator offers unlimited text overlap.
- Free-form text positioning, point and click typing, font and color palette thumbnails, drop shadows and glows and much more.
- Provides true 3D perspectives for your work. Any object can be rotated or warped on its X, Y, or Z axis, and can be positioned anywhere in 3D space.

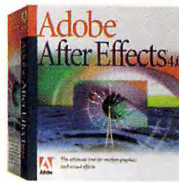


After Effects 4.0

The Most Powerful Tool for Compositing, 2D Animation and Special Effects

The industry-standard for professional motion graphics, After Effects is the most powerful tool available for producing high-end, unlimited composites, fluid animations, and sophisticated special effects. After Effects also generates the highest quality output at the desired resolution so it's the ideal design tool for film and video producers and editors, graphic designers, multimedia professionals and Web developers.

- Produce stunning special effects for broadcast, film, video and multimedia right from your desktop.
- Create animations for openers, bumpers, promos, commercials, music videos, titles, games, and more.
- Control layers with stunning precision. Combine unlimited layers of moving and still images.
- Add any number of keyframes, animate and apply special effects to each layer, and adjust those layers until the composite looks and moves exactly as you want.
- Enjoy precise control over every aspect of your composite—from sub-pixel positioning to controlling the shape and velocity of each animation path. **\$629⁹⁵**



ICE Final Effects Complete

Final Effects Complete is a premium set of 60 motion graphics effects' plug-ins for Adobe After Effects which create professional special effects for film, video and other digital video production. Final Effects Complete offers the ability to generate rain, snow, fire, smoke, bubbles, liquid mercury distortions, explosions, 3D particles, liquid displacement and lighting effects, a multitude of stylistic transitions and other video effects.

- 60 Hollywood-style filters and transitions—the same ones used in MTV and Fox promos.
- Full-featured 2-D and 3-D particle system. Create rain, smoke, fire, bubbles, ball action, confetti, jet trails, water ripples, cubes, star bursts, hair, liquid mercury blobs, fireworks and more.
- Particle World, an amazing 3D particle system with Z-depth and full camera tilt movement, lets you spray particle objects around your 2D image layers.
- Design unlimited effect combinations with interactive control over subtle compositing details. Effects can be animated over time to add even more sophistication.
- Incredible one-of-a-kind stylistic effects. Burn your image away like melting film. Paint in brush strokes with a glue gun. Scatterize every pixel of an image. Create psychedelic flowing backgrounds and kaleidoscope patterns. Flip your image like a page turning in a book to reveal another image. Materialize an image into glass or a blobby substance over time.
- Dramatic or subtle lighting with spotlights, multi-colored light rays, light sweeps and light bursts. Time controls for echo and motion blurring effects.
- Bend, slant, split, ripple, stretch, tile, twist and crumple your image or movie in an infinite number of ways. Turn them into a movable sphere or cylinder, rotate or manipulate them in any imaginable perspective without destructive clipping. The possibilities are endless.
- Remove tell-tale wires from blue screens. Create alpha maps and sepia tones, composite between effect and source, and even rotate between color values.



CTI DISK ARRAYS for Mac and Windows NT

Video applications need extremely high data throughput to ensure high quality video. Using Ultra SCSI technology and Seagate Ultra SCSI 16-bit disk drives, CTI disk arrays provide high data of up to 80 MB/sec to ensure smooth clean video without dropped frames. Especially designed for audio and video applications, Seagate disk drives employ embedded servo technology, eliminating the need for thermal recalibration. With a series of disk arrays fully tested for Windows NT and Mac PCI systems, CTI delivers the flexibility, performance and reliability you need at very competitive pricing. Available in fixed and removable configurations, CTI arrays range from 8 GB to 180 GB per system and up to 1500 GB when daisy-chained.



Among the fastest in the industry, CTI Disk Arrays for Macintosh and PC are ideal for video and pre-press or any other application where absolute speed is essential. All solutions are based on world-proven Seagate Barracuda hard drives, and all feature steel chassis, extra capacity cooling fan, fixed or removable enclosures, push button SCSI selectors and Ultra SCSI performance. All include ATTO express PCI interface card, stripping software, cables, active terminators and five year limited warranty.

- AV ready • Raid level 0 for high-speed data striping
- Push button SCSI ID selector
- Includes Seagate FAST Wide Ultra SCSI 16-bit high performance drives
- Incorporates stripping software for Mac-based systems
- Uses ATTO single or dual channel PCI Ultra SCSI controller cards
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Toast Master Flying High

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OUT WITH THE OLD, IN WITH THE OLDER

by Bohuš Blahut

Creative Video Overlays

Back in the '90s, when I was a teacher in film school, I devised what was then a radical course. In my class you learned about the intersection of computer technologies and video. We had a few pieces of outboard video gear - the showpiece of which was a Video Toaster! While my class was creating videos loaded with special effects and graphics, the TV & Film departments were still using character generators with the graphic resolution of '80s video games.



One day, some of the higher-ups in the Film department crept into my class asking to see ToasterCG. They were about to buy a dedicated character generator for twice the price of the Video Toaster. The selling point? It included eight fonts! I proceeded to show them the Toaster and its hundreds of fonts. As I loaded up ToasterCG, they tried to muffle their chortling at the kind of quality they could expect for so little money. As you can imagine, they were knocked on their collective keisters.

Sadly, ToasterCG is showing its age; but it doesn't have to. Despite being a 1991 vintage program, there's still a lot left to poke around in. I haven't seen too much Toaster and Flyer work out there that comes even close to pushing the limits of what CG

Figure 1



working on would have never been possible in that era). Through a few simple steps, you'll learn

better to shrink a graphic than stretch it bigger. Set [Shadow Type] and [Outline Type] to None. Set the [Text] color to [Purple] (choose it from the list of [Presets]), and set its Alpha Channel level to 128.

can offer. So leave your marble beveled bars and your blue gradients at the door, and let's get started.

No More Beveled Marble

Since the Toaster's CG was one of the system's main selling points, it's also one of the elements that you'll see in use most often on television. Hiding the Toaster's footprints means not using time worn cliches of the CG program. Unless you're doing a video for a company that works in marble (my father did, and we have a garage full of the stuff), don't use it or any other beveled box. It's a dated look that never looked really good in the first place.

Thanks to cable TV and video rentals, we have unprecedented access to the past. Perhaps this is why the retro look is so hip right now. The last few years have not been an echo of a particular era, but of many. It's not unusual to see a kid wearing 80's nylon parachute pants, a too-tight '70s T-shirt with an Atari logo in it, topped with a multi-pierced head from some nightmarish period that scarcely bears thinking about.

My intention is not to criticize current trends. Rather it is to point out that this mix of times and tastes makes this an interesting time to be working in a field that's all about presenting an image. Of all of the things that I expected the Video Toaster to be, I never expected that it would be a time machine as well. From the hippest urban looks, to Framestores in the style of the silent movie era, the tools within the Toaster have made this all possible for my work.

Fasten Your Time Travelling Seatbelts

We are going to create a graphic board much like what you'd see on *Nick at Night* or *The Screen Gems Network*. We're going for a '50s look (ironically the design that we'll be

how to capture the flavor of a particular look. These tips don't apply only to '50s kitsch. With only a few changes you can create any of myriads of looks.

We will use both ToasterCG and ToasterPaint to create this retro '50s graphic. ToasterCG doesn't have nearly the flexibility that ToasterPaint does, but the font handling in ToasterCG is significantly better. First, we'll create a page in CG and lay out a few elements that we will use later as brushes in ToasterPaint. An important tip to take note of is that we'll be using the same color background in CG and ToasterPaint. This allows us to share elements between the two environments seamlessly. We'll also circumvent the ugly anti-alias fringing that I see so often in finished Toaster and Flyer projects.

In ToasterPaint, we'll draw upon the elements that we created in ToasterCG and creatively compose them in ToasterPaint. A few clicks later, we'll have a finished graphical board to lay over live video via the Switcher's Superimposer.

First we'll use ToasterCG to create a few elements that we will use later as brushes in ToasterPaint.

I've included some required elements in the Downloads area of this issue's bonus section. In case you don't have them, I've included the Toaster fonts you'll need, too.

1. In ToasterCG, set the Page Type to 1. [Framestore Page]. Click [Palette], change the [Background] to [Solid Color], and set it to pink (R:255, G:171, B:225).

2. Click [Add Font] and select "B&P_Graphics/calgary-demibold". Enter 250 for the font Height. Type an asterisk "*" [Shift-8] (Figure 1). Position it in one of the corners. We've made it large because later we'll need it in several sizes, and its always

3. [Add Font] "fontbankh-m/muriel" with a Height of 120. Type "Retro" (Figure 1). Position it far enough away from the asterisk so that it will be easy to pick each up as separate brushes.

You may want to decrease the spacing between the letters a bit. This is called "kerning" and it's really simple to do. Just use the arrow keys to position the cursor underneath the letter that you want to nudge. Hold down [Alt] and press [Left Arrow]. You'll see the space between the two letters get smaller. ToasterCG's built-in kerning isn't very good with some fonts, so I find myself adjusting it on almost every CG page that I create.

Double-click the "Retro" text to select all the letters, and then choose the thinnest [Outline Type] possible around the letters. This will help separate the text from its background. To do this, click until the outline disappears entirely from the icon, then click once more. Make sure that [Shadow Type] is still set to None.

Make the [Text] color white (R:255, G:255, B:255) and [Outline] color black (R:0, G:0, B:0). Set its Alpha Channel level to 96.

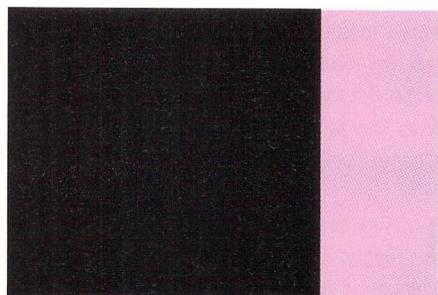
4. [Save Book] this as "Retro-Parts.book", just in case you need to get back to it later. We also want to save this as a Framestore "Retro-Parts.fs". In 4.x you can do this easily by clicking [Save Page]. In 3.x, you will need to [Render Page] and Framestore [Save] from the Switcher screen.

We used ToasterCG to create these elements because ToasterPaint's font handling isn't quite as good. Also because, you cannot input an asterisk into the text field.

Now we will move on to ToasterPaint, where we'll quickly create an original looking graphic with a touch of artistic flair.

Toast Master Flying High

Figure 2



5. In ToasterPaint, go to [Color] and set the Current Color to pink (R:255, G:171, B:225). Draw a [Solid] [Rectangle] that stretches from top to bottom, and takes up the right third of the screen (Figure 2).

6. Press [j] to swap screens, and then Load [Framestore] "Retro-Parts.fs". Select the [Scissors] tool and the [Rectangle]. Pick up the asterisk as a brush. On the [Options] menu, select Brush [Copy -> Swap]. This puts the asterisk brush into a buffer which is necessary for the next step - a really cool step I might add.

7. On the [Tools] menu, set the Draw Mode pop-up (this is a pull-down menu in 3.x accessed via the right mouse button) to [TxMap] - short for Texture Map. This is what will allow you to interactively size and warp the brush as you stamp it down.

Click [Transp/Warp] and enable [Antialias]. In 3.x, you'll see two icons. One has a jagged edge, the other has a smooth edge. Select the smooth edge.

Swap screens [j] to display the page with the pink rectangle.

Select the [Solid] [Rectangle] again to remove the brush from your mouse pointer. Drag out a rectangle about the size of a penny near the top of the pink area. You should see a smaller version of the asterisk appear. No matter what size you draw the rectangle, you'll get a same sized version of the asterisk. Continue to draw lots of asterisks in various sizes. Be careful not to draw anything in the black area (Figure 3).

8. Load [Brush] "Brush_181.iff". Set Draw Mode to [Normal] and paste the brush in the lower right corner (Figure 4). This gives us something to compose our text around. In case you're wondering, the TV comes from an early Club Toaster CD (Dimension Technologies).

You might want to do some touch-up work on the television at this point. I added some colorbars and tweaked various parts.

9. Swap screens [j] again. We're going to pick up the word "Retro", but we don't want to pick up the surrounding pink area. Press [,] to enter Pick Color mode and click on a pink portion of the image close to the TV to make it the Current Color.

Go to [Options] and enable [No Bkgnd]. This means that when we pick up a brush, anything that is the current color will be ignored.

Select the [Scissors] and [Rectangle] and



Figure 3

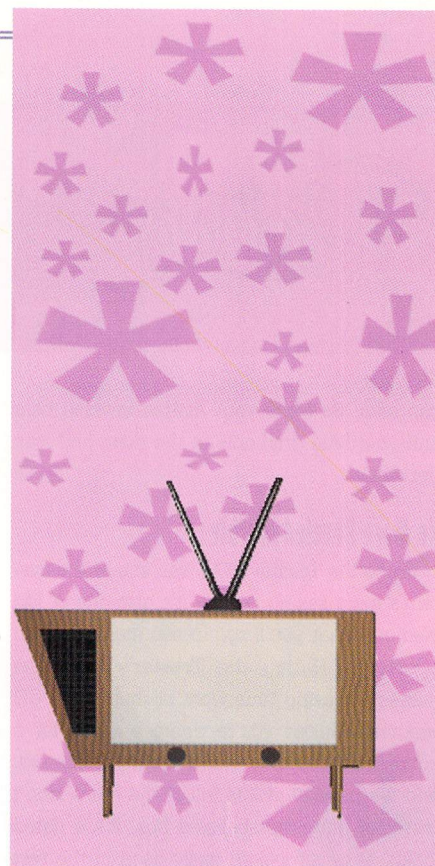


Figure 4

pick up the "Retro" text.

Swap screens [j] back to our project.

10. To minimize problems with the edges of our text, click on [Transp/Warp] and select [Point] mode (the checkered ball). Set Edge to 20. This will give the brush slightly transparent edges, and eliminate lots of the fringing. Paste the text above the TV (Figure 5).

Turn off Transparency by clicking on the [Point] button again.

11. Now let's add the text "TV" on the screen itself. For this, we can use ToasterPaint's built-in text support.

From the [Text] menu. [Load Font] "fontbank-m/jasper". Set it's Height to 75. Enter Text "TV" and press [Return]. Paste the new brush in the center of the television's screen (Figure 6). Press [,] to remove the brush.

12. Set the Drawing Mode to [Blur], and click [Full Image] to apply the blur to the whole picture.

You can get additional control over the blur by using the [Transp/Warp] controls. Try setting

Figure 5



Center/Edge to 50. Or set the level quite low, and click [Redo] a couple of times to gradually build up the amount of blur. Think of this as a coat of varnish that you spray over the whole graphic to fix everything into place. I do this with most of my Toaster generated graphics.

B. Save [Framestore] as "Retro.fs".

That was pretty easy! Once you've created one of these graphic boards, you'll surprise yourself at how quickly you can make more of them in various styles. Now let's overlay our graphic over video.

14. On the Switcher screen, load "Retro.fs" into one of the DV buffers. In Main, select the live input or DV buffer on to which you want to overlay this graphic.

Under Superimpose, select the DV that "Retro.fs" is in and enable [Key On Black]. Adjust the Clip Level until you get a good mix. Mine worked best at about 26.

That's it! Just edit this video sandwich into your project. If you're using a Flyer, you can also digitize footage to your hard drive with this overlay permanently burned in.

A Sandwich For Any Meal

This type of graphic board is both versatile

and practical. It's inevitable that portions of our videos will need a lot of explanatory text. Instead of stopping the flow of the action by popping up a static image with text on it, it's much more interesting to still have some motion to the scene while still leaving room for text.

Don't let your creativity end with the graphics. You should also do something interesting to the incoming video. Since we have built a retro '50s graphic, changing color video to black & white would seem to be a natural. If you wanted to get really enterprising, you could also combine it with the Toaster's full frame Kinescope vignette effect.

Let's imagine that you have a job creating bumpers for a video tape re-issue of the rare '50s comedy, *Uncle Boffo's Bunco Squad*. The show is in black & white, and you've created several sharp graphic boards to overlay as the opener to the tape, but it still doesn't look very exciting. Why?

Just adding the graphic board isn't enough of a contrast from the body of the program. If the whole show is monochromatic, simply adding a blotch of pink on the side isn't really going to grab the audience. More importantly, it may be too subtle to the viewer that this is not supposed to be part of the body of the show.

If you have black & white footage coming in, it's easy to add a subtle colored tint to it. You undoubtedly have your video signal feeding through your Toaster via a Time Base Corrector. Normally, you use the processor controls to fix bad video, but here's your chance to have a little fun. Just twiddle the knobs for hue and color balance. You can get a whole range of subtle colored tints and outrageous effects this way.

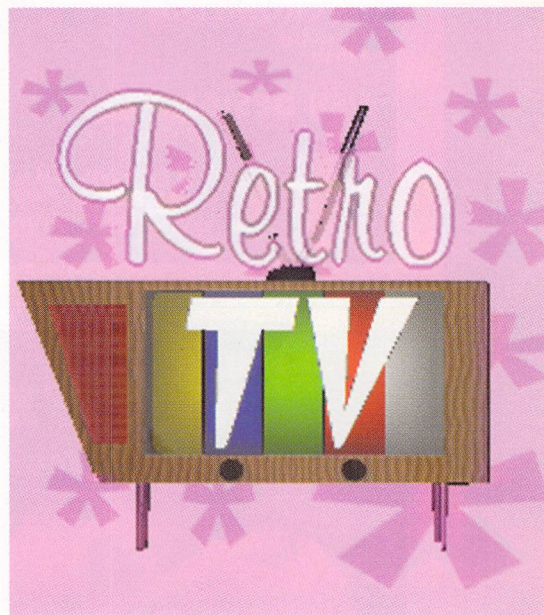
Effecting the underlying video helps the graphics and text pop out at the viewer a little more. This is one of the most exciting aesthetic benefits to adding more color to the overall frame containing this graphic. Possibly more important than aesthetics is that we have gone a long way to creating a signature look for our client, and this overall procedure probably didn't take very long - with an extra

minute of experimentation added on to colorize the video. Many of us forget to do that... create a look for our clients.

Here is another chance to blow the dust off of that second Toaster in your closet. How about running the video through ChromaFX to get a saturated color overlay? How about using the Toaster's blurring Trails effect? How about both?

As with any technique, the more you use it

Figure 6



the better you will get at it. You'll also surprise yourself how often you'll find uses for what you've learned here. I'd really like to see an end to boring lower-third titles, and an upswing in graphics that contribute to the look of a piece. It's far too easy to make your video look like a cookie cutter copy of the one that your neighbor made with his Toaster. On the other hand, it's easier than you think to make your video uniquely your own with just a few simple steps like these. 

Bohu's Blahut is the director of The Vantage Point and creator of the Catalyzer tutorial video series. You can email him at bohuf@xnet.com

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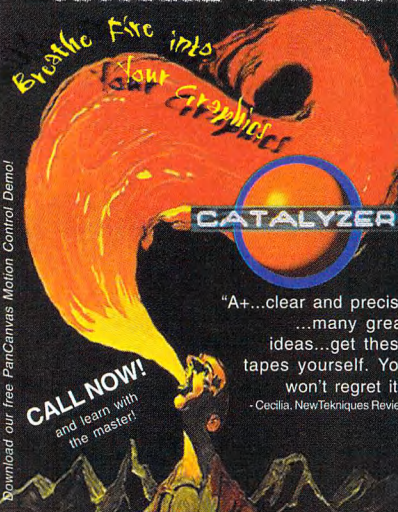
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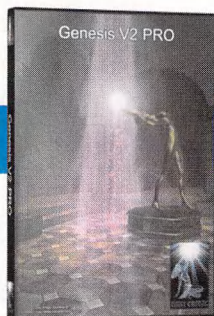
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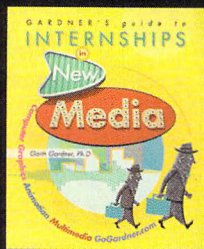
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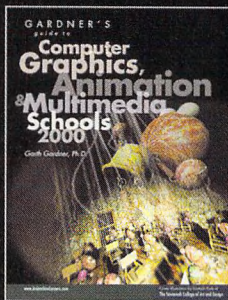
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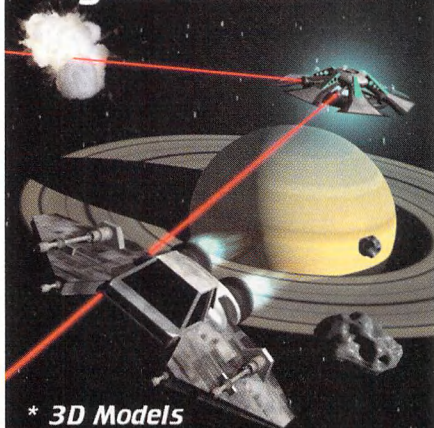
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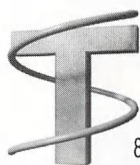
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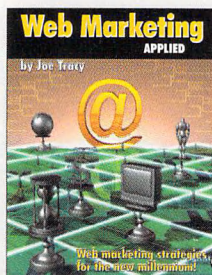
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MOJO

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It's four hours before the year 2000.
What's on Mojo's mind?

by Mojo

FOUR DOWN Mojo Looks Back At ... Everything

As I sit down to write this, there are four hours left to go in the Twentieth Century.
Four hours.

The party I'm going to doesn't start for awhile and so I find myself with time to contemplate what most people are thinking about right now - everything. Not just our lives, but everything that we as a culture, as a society - in fact, as a species - have accomplished. After all, it's not just the end of the century, it's the close of the second millennium.

Usually on New Year's Eve we think about what we have done with our lives over the past year and what we can do to make the next one better. At this particular moment, however, it's hard to think not just of myself but of all of us - what we've done and where we're going.

A thousand years! I've heard so many people say, "Oh, it's just another year," but deep down I think we all realize what a momentous occasion this is and how lucky we are to be alive to experience it. It's going to be a long time until another generation sees this moment come and

go and so I had wanted very much to celebrate in the most incredible, spectacular and memorable way possible.

But how? What does one do to mark the event of a dozen lifetimes? When I first thought about this years ago, I wanted to make sure I was at the biggest, maddest, most intense party I could imagine; thousands of people screaming at the top of their lungs with smiles on their faces and their hands in the air. Perhaps Epcot Center, where everyone would be welcoming the dawn of the year 2000, the iconoclastic year of the future; or

maybe Times Square in New York, where I grew up and could be with 'my people'.

As the day drew nearer, my indecisiveness and procrastination guaranteed that it was now too late to attend any giant, commercial extravaganzas - I'd have to come up with something unique and doable at the last minute. Whatever it was, I had decided that I did not want to be at some bar or club with a bunch of strangers screaming a countdown - that's what I do every year! No, this year has to be different.

Maybe I could find some spot overlooking L.A. and watch the world go Y2Krazy; even better, why not go and climb Devil's Tower in Wyoming? I had wanted to do that ever since I was twelve and saw *Close Encounters of the Third Kind*. I thought about gathering a group of people and entering a bomb shelter for the night, leaving behind all watches and connections to the outside world and stay there until dawn.

All of these seemed like fun ideas, but something was keeping me from actually getting off my ass and planning any of them. Was it pure laziness? Perhaps I was succumbing to the apathy so many people seemed to have about New Year's, 1999. In any case, I didn't make any special arrangements and in about an hour guess where I'll be? At a bar in Hollywood with a lot of people I don't know.

However, what started out as a

way to kill a few hours before the party has forced me to really look at what entering 2000 means; given its significance, can any party or event truly do it justice? Is it really about the biggest countdown or the loudest music or the most spectacular lightshow?

No. In fact, really celebrating this new year has nothing to do with outward expression but with inward realization. At this moment all I can think about is how important it is to contribute; to do my part to make the world a better place and, in no matter how small a way, to make life better and more enjoyable for generations to come. Whether it's just by making a movie that inspires people or by curing cancer, the contribution to the greater good is what will insure that all of us live on past today, past tomorrow and into the next millennium.

No matter where I am tonight or what I'm doing, I'm going to have a great time because I've realized that celebrating the year 2000 has nothing to do with tonight at all; it's about understanding and appreciating what the people of the last thousand years have given us and that we must all give back. In that time, our society has come a very long way and if we all help push just a little bit, it will go further than any of us can imagine. 

Mojo is an Emmy awarded Senior Animator at Foundation Imaging. You can email him at mojo@foundation-i.com

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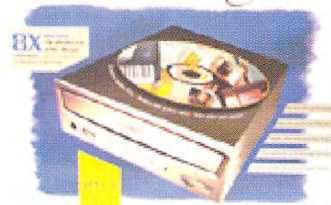


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